TECHNICAL BACKGROUND REPORT: A SOLUTION TO CLIMATE CHANGE AND BIODIVERSITY LOSS

CONSERVING OUR NEAR-URBAN NATURE

Southern Ontario Nature Coalition

Technical Background Report: A Solution to Climate Change and Biodiversity Loss
Prepared by Souther Ontario Nature Coalition (SONC)
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Land Acknowledgement

We the Southern Ontario Nature Coalition (SONC) acknowledge that the land we meet on and strive to protect is the territory of the Anishinaabe and the Haudenosaunee Peoples which is now home to many diverse First Nations, Métis, and Inuit. While honouring these traditional territories, we offer gratitude to the First Peoples for their care of and teachings about our collective Mother and our relationship with her.

Through this work, we have come to understand that since time immemorial the Indigenous Peoples have been practicing conservation and have lived in harmony with the balance of nature. This time on the land has allowed for a deeper understanding of the natural processes that occur throughout each year and from this perspective Indigenous Peoples share a deep connection to the land, one of kinship as all living things are seen as equals, relatives, whom we All have a reciprocal relationship with. In the eyes of the First Peoples, land and people are interconnected – not mutually exclusive.

For millennia Indigenous Peoples were self-reliant and well provided for by the land through ceremony and gratitude as well as their own ingenuity as they have been gifted with the knowledge of how to responsibly and sustainably harvest and care for the offerings of the land in which they have continued to seek to protect, preserve as well as share this knowledge in the face of many challenges.

Many events have occurred since European contact that have and continue to have detrimental impacts on the lives of the Indigenous Peoples including treaties that were fabricated and/or not upheld, Residential Schools, the Sixties Scoop, and the Indian Act that is still very much prevalent in controlling the lives of the Indigenous Peoples today.

At present, due to the attempted genocide, assimilation and colonization much of southern Ontario no longer reflects the thriving landscape that once was abundant with trade routes, harvesting, and Community, both human and non-human. This vibrant way of life has nearly been wiped out with only remnants of the natural beauty and little visibility of the Peoples who have protected, preserved, and sustained it for millennia and who continue to face challenges to uphold that responsibility to this day.

As the Southern Ontario Nature Coalition undertakes this important work, we have come to recognize that not only all of Ontario but the whole of Canada is to this day, the homelands of Indigenous Peoples and all others are guests of this land. With this knowledge we also recognize that looking at the land through an Indigenous lens allows us to better understand that we have common values and goals as well as a lot we can learn. We must come together in all efforts to support those who have demonstrated time and time again the importance of protecting that in which sustains us All.

With this realization, we are committed to ensuring that others know these Truths and that the areas in which we seek to protect, preserve, and restore are not only reflective of the knowledge of the Indigenous Peoples and their rich history, we will also ensure that their knowledge is sought out, supported, and leads the work being undertaken as this is their inherent right as the original caretakers of this land.

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The Southern Ontario Nature Coalition (SONC) is a group of experienced provincial, regional, and community-based conservation organizations, land-based policy experts, and Indigenous consultants. With support from the Government of Canada, SONC is developing a strategy that supports a robust Near-Urban Nature Network for the Greater Golden Horseshoe. What we learn in southern Ontario will inform, inspire, and connect urban landscapes across the country. Ultimately, our work today is critical to the resilience and prosperity of Canadian communities tomorrow. The Coalition is committed to engaging Indigenous Communities in accordance with community protocols and the development of Ethical Space for all to contribute meaningfully

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Glossary

Areas of Natural and Scientific Interest (ANSIs): publicly or privately owned areas of land and water designated for their significant life science (biodiversity) or earth science (geological) values.

Bluebelt: In 2016, a coalition of 120 groups across Ontario supported Greenbelt expansion to protect vulnerable water systems throughout the Greater Golden Horseshoe. This proposed area of expansion was given the name "Bluebelt."[1]

Canada Target 1: Canada's area-based conservation target as set out in Canada's Biodiversity Strategy and updated in the Pathway to Target 1 initiatives One with Nature, Canada's Conservation Vision, and We Rise Together reports. With new Federal commitments, this target has been updated to conserve 25 per cent of Canada's lands, freshwater, and oceans by 2025, working toward 30 per cent by 2030.

Canadian Protected and Conserved Areas Database (CPCAD) contains the most up-to-date spatial and attribute data on marine and terrestrial protected areas and other effective area-based conservation measures (OECMs) in Canada.

Community science (also known as **citizen science**, **crowd science**, **crowd-sourced science**, **civic science**, or **volunteer monitoring**): public participation in science.

Crisis ecoregion: A term used by Kraus and Hebb (2020)[2] to define ecoregions that have higher biodiversity and biodiversity threat scores compared with other ecoregions in the southern Canada. These ecoregions represent less than 5 per cent of Canadian lands and inland waters, but provide habitat for more than 60 per cent of Canada's species at risk.

Cultural values: The International Union for Conservation of Nature (IUCN) uses the term "cultural and spiritual values" to refer to values that different cultures, religions, and the public place on features of the natural environment that have meaning and importance for them. In this report, we put specific emphasis on Indigenous cultural values when using this term.

Ecological connectivity: The unimpeded movement of species and the flow of natural processes that sustain life on Earth.[3]

Ecological corridor: A defined geographical space that is governed and managed over the long term to maintain or restore ecological connectivity. The following terms are often used similarly: "**linkages**," "**safe passages**," "**ecological connectivity areas**," "**ecological connectivity zones**," and "**permeability areas**."

Ecological network (for conservation): A system of core habitats (protected areas, OECMs, and other intact natural areas), connected by ecological corridors, which is established, restored as needed, and maintained to conserve biological diversity in systems that have become fragmented.

Ecosystem services: the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth.[4]

Ecological values: values or components that are proxies or indicators of biodiversity and/or ecological functions. These values include regionally or locally rare and threatened species, areas of diversity of species and ecosystems, and importance to ecological connectivity.

Ecoregion: a unique area of land and water within an ecozone defined by a characteristic range and pattern in climatic variables, including temperature, precipitation, and humidity. The climate within an ecoregion has a profound influence on the vegetation types, substrate formation, and other ecosystem processes, and associated fauna that live there.[5]

Ecozone: a very large area of land and water characterized by a distinctive bedrock that differs in origin and chemistry from the bedrock immediately adjacent to it. The characteristic bedrock domain, together with long-term continental climatic patterns, affects the ecosystem processes and biota found in the ecozone. An ecozone is resilient to short-term and medium-term change, and responds to global or continental cycles and processes operating on the order of thousands to millions of years.

Ethical space: a venue for Indigenous and non-Indigenous Peoples to meaningfully interact with one another in mutual respect of our distinct worldviews and knowledge systems, in order to collaborate, co-create solutions, and achieve common ground.[6]

Indigenous Protected and Conserved Areas (IPCAs): lands and waters where Indigenous governments have the primary role in protecting and conserving ecosystems through Indigenous laws, governance, and knowledge systems.

Niagara Escarpment includes a variety of topographic features and land uses extending 725 kilometres from Queenston on the Niagara River to the islands off Tobermory on the Bruce Peninsula. In 1990, the United Nations Educational, Scientific and Cultural Organization (UNESCO) named Ontario's Niagara Escarpment a World Biosphere Reserve.

Near-urban nature consists of the forests, river valleys, wetlands, grasslands, farmland, and other ecological features that surround and intersect our communities. This nature is critical to the health and well-being of communities and is one of our greatest opportunities for adapting to climate change.

Key Biodiversity Areas (KBAs): "sites contributing significantly to the global persistence of biodiversity," in terrestrial, freshwater, and marine ecosystems.[7]

Oak Ridges Moraine, part of the Greenbelt, is an environmentally sensitive, geological landform in south central Ontario that stretches 160 kilometres from the Trent River in the east to the Niagara Escarpment in the west, covering about 190,000 hectares.

Other Effective Area-Based Conservation Measure (OECM): A geographically defined area, other than a Protected Area, that is governed and managed to achieve positive and sustained long-term outcomes for the conservation of biodiversity, with associated ecosystem functions and services and, where applicable, cultural, spiritual, socio-economic and other locally relevant values are also conserved.[8]

Permeability: the "degree to which regional landscapes, encompassing a variety of natural, semi-natural and developed land cover types, are conducive to wildlife movement and sustain ecological processes."[9]

Protected Area: "A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." (IUCN definition)

Provincially Significant Wetlands (PSWs): identified by the Ministry of Northern Development, Mines, Natural Resources and Forestry based on assessments using the Ontario Wetland Evaluation System.[10]

Provincial Wildlife Areas (PWAs): unceded (Crown) land sites that are managed for wildlife and outdoor recreation, particularly for hunting and wildlife viewing.

Regime shift: Substantial reorganization in an ecological system's structure, functions, and feedbacks that often occurs abruptly and persists over time.[11]

Social values of nature: the community benefits of nearby nature beyond cultural and spiritual values; includes many of the values described by the term "ecosystem services," including climate resilience, public health, and the community-building benefits nature can provide.

Unceded (Crown) lands: lands that fall under Ontario's Public Lands Act or that are federally administered lands. We recognize that this term is contested and use this combination to reflect that lands commonly referred to as Crown lands, by most interpretations, should really be First Nations lands. The term unceded includes lands meant to be shared, not surrendered through treaties.[12]

Williams Treaties: the Williams Treaties First Nations are the Chippewas of Beausoleil, Georgina Island, and Rama and the Mississaugas of Alderville, Curve Lake, Hiawatha, and Scugog Island. These seven First Nations were signatories to various 18th- and 19th-century treaties that covered lands in different parts of south-central Ontario. In 1923, the Chippewas and Mississaugas signed the Williams Treaties and together, more than 90 years later, the Williams Treaties First Nations have joined to ensure their rights to and the relationship with the land is respected (see Appendix C for more information).

Executive Summary

A matter of urgency

The importance of nature to our future has never been clearer. The dual crises of biodiversity loss and climate change, as well as the importance of delivering on Truth and Reconciliation calls-to-action, requires us to change our relationship to nature.

Nature is not just "out there" in rural or remote regions or in designated conservation areas, it is right here and all around us. Some of the most ecologically important areas in Canada are the natural areas and farmland in and around our cities. And with 80 per cent of people in Canada living in urban areas, nature's benefits are closely felt. At the same time, these are also the most vulnerable areas: from 1992 to 2000, 16 per cent of habitat lost globally was directly due to urbanization. Without a different course of action, even greater losses are expected by 2030.

The elements of near-urban nature – the forests, river valleys, wetlands, grasslands, farmlands, and other natural features that surround and intersect our cities – provide resilience to extreme weather, important outdoor spaces for communities, and habitat for plants and animals. Nature is also central to Indigenous Ways of Knowing and culture and provides local food and essential gifts from nature or "ecosystem services" to communities. These benefits will only become more important as climate change progresses.

Governments around the world are making bold commitments to protect nature, conserve biodiversity, and help communities adapt to climate change. Canada has committed to conserving 25 per cent of its lands, freshwater, and oceans by 2025, working toward 30 per cent by 2030, as a member of the global High Ambition Coalition for Nature and People (these area-based targets are expected to become Canada's new Biodiversity Target 1, currently at 17 per cent). The Government of Canada's two billion trees commitment supports restoration of Canada's natural areas by 2030, which in turn will support reducing greenhouse gases by removing and storing carbon from the atmosphere. The federal and provincial governments have also committed to supporting Indigenous rights, responsibilities, and priorities in conservation as described in the 2020 report *One with Nature: A Renewed Approach to Land and Freshwater Conservation in Canada.*

These goals require a strategy to protect and restore nature in Canada's near-urban landscapes. While our governments have made progress in protecting biodiversity by conserving large wilderness areas, efforts in urban areas require a different approach.

The Southern Ontario Nature Coalition (SONC) proposes a Near-Urban Nature Network for Ontario's Greater Golden Horseshoe (GGH), which is Canada's largest and most rapidly developing urban area. Like urban areas across Canada, the GGH is facing biodiversity loss, climate change, and growing demand for access to greenspace. Fragmented landscapes and ownership, and competing visions for the use of lands in the GGH create challenges to conserving near-urban nature. Ecological corridors that connect habitats and enable wildlife to move across the landscape are critical to conserving biodiversity and near-urban nature in regions like this. New protection tools can help communities meet growing demand for access to greenspace and restoration activities can create jobs and build climate-resilient communities. Land-use policies and decisions must also recognize the need for nature.

A Near-Urban Nature Network involves:

- **Protecting land** by expanding critical natural core areas and corridors that enable wildlife movement and conserve biodiversity;
- **Restoring landscapes and ecosystems** to increase climate resilience to flooding, provide relief to extreme heat, and prevent drought;
- **Preventing further degradation**, such as erosion, removing invasive species, reintroducing native plant species, and allowing streams to run freely;
- **Working collaboratively with Indigenous Peoples** in Ethical Space, honouring Indigenous Knowledge and relationships to the land and nature;
- **Forging community partnerships** to manage lands; and
- **Creating accessible greenspace** to meet growing demand for recreation, as well as spiritual and cultural connection.

Local communities and governments in other Canadian cities support similar actions, including establishing more national urban parks to anchor habitat protection and connectivity, connecting people with nature, and significant national programs to manage biodiversity and protect and restore ecological corridors.

The Greater Golden Horseshoe (GGH)

The GGH is home to 70 per cent of Ontarians, several First Nation Communities, and 10 million residents. The population is expected to grow to 15 million by 2051. At the end of 2020, only 94,687 hectares of the GGH have been recognized as Protected Areas through Canada Target 1 accounting. This includes Rouge National Urban Park and provincial parks in the northeast, and amounts to 2.6 per cent of the total area of the GGH.

Nature Conservancy of Canada has identified biodiversity priority areas for urgent action across southern Canada. Their report shows two 'crisis ecoregions' in the GGH, a designation that refers to an area of high ecological value at high-risk of being degraded or lost. Urbanization poses a significant threat, despite a strong land-use planning framework. The demand for recreational access to greenspace is higher in this region than anywhere else in Canada. As the climate changes, increased flooding is a reality and the region is already one of the hottest in the country. The number of summer heat waves is expected to double by 2050. Drought is a growing concern.

The Great Lakes are the largest natural barrier to terrestrial species migration in eastern North America. The urban landscapes around the lakes are further impeding the movement of wildlife, which need to migrate in order to adapt to climate change. The GGH covers 3.2 million hectares of land; corridors are needed to maintain ecological connectivity and species movement through this region and south from the US, highlighting the importance of bilateral efforts with the US to achieve conservation of species.

Fortunately, there is tremendous opportunity to protect biodiversity and nature's benefits in the GGH. An estimated 30 per cent natural cover remains in the region and the 7,000 square kilometre Greenbelt contains a natural heritage and water resource system that stretches across public, private, and agricultural lands, and into cities through 21 Greenbelt-protected urban river valleys. The Greenbelt's approach and success to conserving connectivity is unique within Canada's urbanized areas and one of the best examples of its kind in the world. A review of natural heritage systems adjacent to the Greenbelt indicates connectivity corridors remain with significant ecological landscapes external to the GGH including the Carolinian Zone to the west, Algonquin to Adirondack Corridor to the east, Cootes to Escarpment EcoPark System on Lake Ontario, and Great Lakes coastal wetlands.

A Place to Grow: Growth Plan for the Greater Golden Horseshoe also guides development to support transit-friendly, complete communities, and curb sprawl. However, policy gaps may result in the loss of significant ecosystems and ecological connectivity. For example, incomplete data relating to changes in biodiversity in the region impedes understanding and is a gap that needs to be addressed.

Action is needed before ecological connectivity is lost.

Capacity funding from Environment and Climate Change Canada and support from the Government of Ontario, delivered through the Greenbelt Foundation, has allowed the Southern Ontario Nature Coalition (SONC) to identify opportunities for a Near-Urban Nature Network in the GGH. This network would form a key terrestrial link between ecoregions and freshwater bodies in Ontario and Great Lakes Basin. This report builds on progress in protecting near-urban nature in this region to date, identifies key partnerships including municipalities, Conservation Authorities, land trusts, and private and agricultural landowners, and provides a model for action in urban centres in Southern Canada. The report is timely as countries are meeting to set global environmental targets over the coming decades, and as the dual crises of biodiversity loss and climate change demand accelerated and concerted action.

Key findings and opportunities for action focus on alternatives to purchasing lands outright, and address the social, cultural, and economic needs of cities that will drive change.

Key Findings and Opportunities for Action

There is tremendous support for a Near-Urban Nature Network in the GGH – a connected network of lands and waters across the entire region, supported by cross-cultural understanding, in which nature's benefits are well understood and accessible to all, and restoration efforts create jobs and build climate-resilient communities.

Ecological connectivity was viewed as especially important in near-urban nature contexts, where many natural areas have been lost and roads, railways, and other barriers to movement are common. A collaborative and regional approach was viewed as essential.

Report recommendations are based on research, mapping, and a series of stakeholder and Indigenous engagements. These recommendations can provide insights and inform a pan-Canadian approach to creating nature-centered urban areas:

National Nature Strategy for Southern Canada

Near-urban nature objectives need to be integrated into all new national biodiversity, climate adaptation, and agricultural related policies and programs, and any new biodiversity policy coming out of the Convention on Biological Diversity (COP15) scheduled for fall 2021.

Biodiversity, ecological connectivity, and ecosystem services or nature's benefit considerations, must also be incorporated into federal funding programs for protection and climate resilience, including the Canada Nature Fund, Natural Infrastructure Fund, two billion trees commitment, Canada's National Adaptation Strategy, Natural Climate Solutions for Agriculture Fund, Canadian Agri-Environmental Strategy, and Health of Canada's *Health of Canadians in a Changing Climate: Advancing our Knowledge for action* report. Federal leadership is also needed to provide guidelines on identifying significant ecological corridors and ensuring impacts on biodiversity and ecological networks are considered as part of public infrastructure projects and the environmental assessment process.

Federal lands both inside and outside of national parks in urban and near-urban areas can provide significant opportunities for the public to experience, learn about, and help steward nature in densely populated areas. These lands should be assessed for opportunities to contribute to protecting ecological cores and corridors where possible, including lands near Rouge National Urban Park.

Indigenous Rights and Capacity

Indigenous Knowledge Systems and the leadership of Indigenous Peoples results in stronger, more effective conservation. Indigenous capacity support could create more opportunity to engage interested local Indigenous Communities, including urban Indigenous Peoples, in significant and positive nature projects, such as the Near-Urban Nature Network.

Canada jobs and other governments grants can provide needed capacity for engagement activities and the participation of Elders and Knowledge Holders to ensure Indigenous Ways of Knowing, in regard to the lands and waters, are being incorporated into both policy and proposed actions. Creating opportunity for multiple Indigenous Communities to apply collectively for funding, such as through the Indigenous Guardians Programs, would be helpful. Restoration-based economic development investments can help to grow Indigenous-led restoration and community-based forest economies, such as the native plant industry.

Protecting an Ecological Network of Cores and Corridors

Municipalities and Conservation Authorities are landowners with large tracts of land. County and regional forests, Environmentally Significant Areas (ESAs), parklands, and conservation areas could potentially be protected to count toward Canada's Target 1 goal to conserve 25 per cent of its lands, freshwater, and oceans by 2025, working toward 30 per cent by 2030.

Preliminary mapping of natural features and ecosystems, and the use of new protection tools such as Other Environmental Conservation Measures (OECMs), identifies the potential to protect tens of thousands of hectares in the GGH and contribute to Target 1. To make this happen, many of these lands – Provincial Wildlife Areas (PWAs), Areas of Natural and Scientific Interest (ANSIs), and Provincially Significant Wetlands (PSWs), require greater evaluation, management and protection. Many are located on provincial unceded (Crown) land and municipal and Conservation Authority lands. There are seven PWAs in the GGH totalling 5,800 hectares, an estimated 1,066 candidate and confirmed ANSIs totalling 432,629 hectares, and 203,000 hectares of PSWs, with an additional 229,000 hectares of unevaluated wetlands in the GGH (28,000 on unceded [Crown] land).

With support and leadership from Indigenous Peoples and Communities, some of these features could be eligible to become IPCAs, a designation that would provide long-term protection through Indigenous laws, governance, and Knowledge Systems.

Important connections between the Greenbelt, Lake Ontario, and broader external landscapes need to be mapped in finer detail to identify key local ecological corridors. As part of this report, the Cootes to Escarpment EcoPark System, located in the cities of Hamilton and Burlington, mapped wildlife corridors. These locally refined efforts need to be applied across the GGH and include identification of significant wildlife corridors extending into the region from the US.

Capacity to assess protection opportunities and map corridors critical to preserving biodiversity is needed. Land-use planning tools are also needed to increase protection of corridors and reduce the negative impacts of roads on wildlife. Efforts being trialed in the GGH are needed at a larger scale.

Restoration and Natural Infrastructure

Actions to protect and restore biodiversity in Canada's urban areas can address multiple community priorities and drive change. Nearly 15,000 hectares of new parkland is needed by 2041 to maintain current per capita levels in the GGH. A regional greenspace plan is needed for the GGH. Where opportunities for large parks may be limited, investments in linear parks along major corridors such as river valleys or The Meadoway hydro corridor in Toronto, are unique opportunities.

Nature-based solutions hold significant potential in this region for climate change adaptation. Federal and provincial infrastructure programs must recognize these benefits. Research shows that tree planting schemes have the highest returns in near-urban areas (e.g., 3:1 return in Forest Ontario's 50 Million Tree Program). Strategic tree planting can build climate resilience and provide public health co-benefits. Increasing tree cover from 18 per cent to 33 per cent in a near-urban neighbourhood in the GGH could reduce the number of very hot days (> 30° C) in 2080 from 62 to 34. There is space and need for 54 million trees in the GGH that could store carbon and provide climate change adaptation benefits. Large-scale restoration efforts will require a seed strategy and an expanded native plant industry in the GGH and across Canada. Investments can provide local jobs and revenues for governments.

Municipal forests and private woodlots are extensive across the GGH and could be more consistently managed for biodiversity, cultural, and/or social benefits. Support for private and agricultural landowner stewardship including land trust programs is also needed. Re-investments in local stewardship programs and new technologies can increase participation and biodiversity outcomes. Carolinian Canada's "In the Zone" remotely assists 3,500 landowners to manage healthy landscapes across 37,000 hectares.

Regional Collaboration

In the GGH, the continued success of the Greenbelt, ecological connections to the broader geography, and natural infrastructure investments are critical to the region and biodiversity in Canada. The Near-Urban Nature Network sets out a pathway to achieve this nature-centred vision and will require regional-scale collaboration, including key partnerships with governments, Conservation Authorities, the meaningful participation of Indigenous Peoples and Communities, and wider-community engagement activities.

Developing a shared vision for the region among these groups holds potential for scaling up efforts to create a more resilient Near-Urban Nature Network in the GGH. The importance of knowledge-sharing, coalition-building, education, and outreach came up throughout the work of the SONC partnership.

Regional coordination can help the larger community in developing the vision, building capacity, mobilizing action, and establishing opportunities for knowledge sharing. The creation and funding of the Oak Ridges Moraine Foundation and the Greenbelt Foundation has advanced public and political understanding of the importance of the GGH's special landscapes and waterscapes. This work has increased support by the public, landowners, and the agricultural sector. In 2021, more than 90 per cent of polled Ontarians strongly support the Greenbelt initiative.

15k ha

Approximate area of new parkland needed by 2041 to maintain current per capita levels

SONC outlines an immediate path forward for the region.

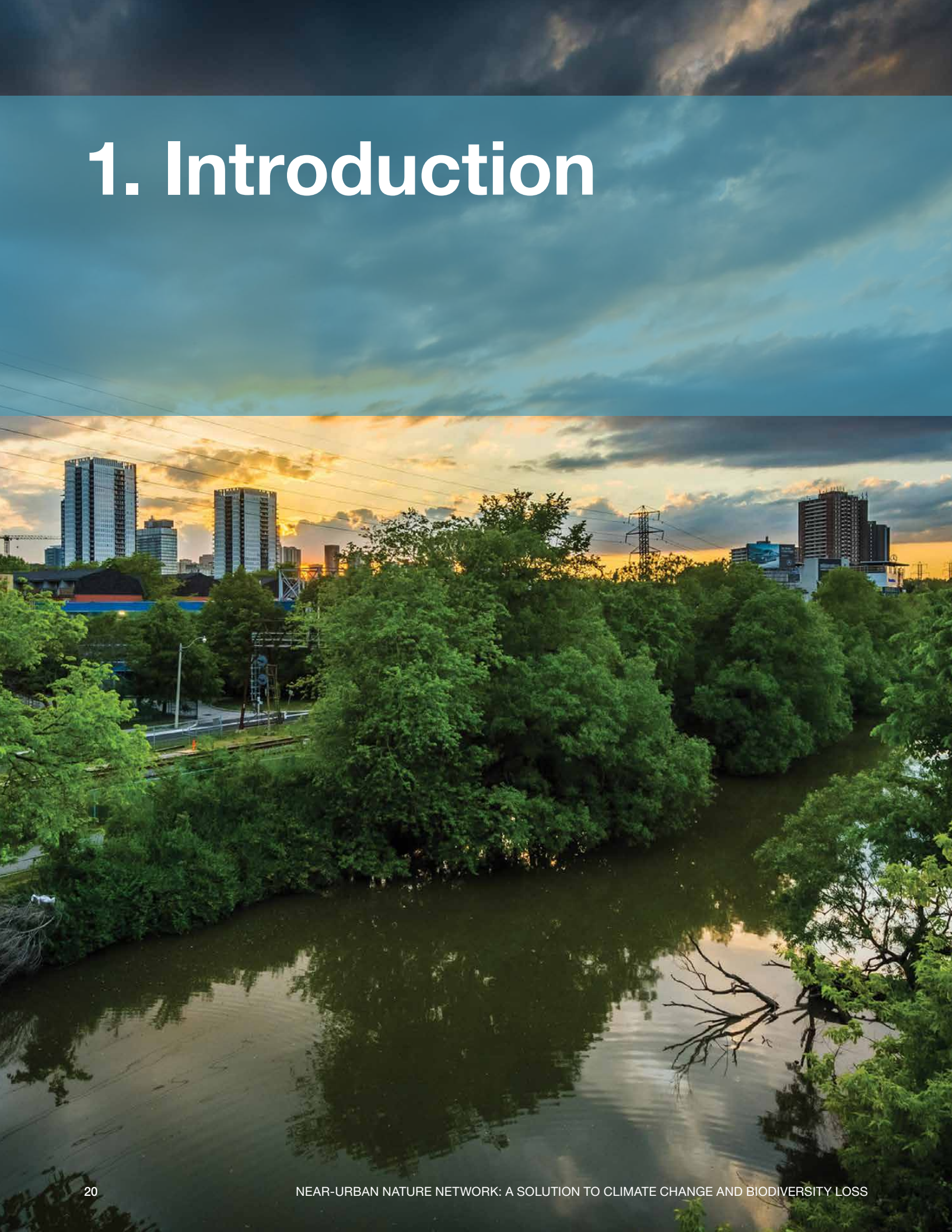
Resources needed to undertake this work are estimated at $10 million over 2 years:

- Continue to **engage interested local Indigenous Communities** in accordance with community protocols and the use of Ethical Space.
- Communicate the vision and importance of the Near-Urban Nature Network for Canada and southern Ontario; build on the model of the Greenbelt and findings of this project, including continuing in-depth **assessment of areas of importance for protecting**, connecting, and restoring land for:
  - Ecology: Key Biodiversity Areas and areas of local significance; areas integral to regional connectivity;
  - Culture: Indigenous biocultural mapping; and
  - Society: communities vulnerable to climate change impacts.
- Support outreach and engagement activities, and the development of tools and resources to **accelerate opportunities to establish protected and conserved areas** in the GGH, including Other Environmental Conservation Measures (OECMs) and Indigenous Protected and Conserved Areas (IPCAs).
- Identify opportunities for regional planning to **improve access to greenspace** for all residents.
- Lead significant **ecosystem restoration actions** in the region and investments in natural infrastructure by:
  - Partnering with the Government of Canada in implementing the two billion tree commitment, including strategic planning and collaboration to identify priorities and monitoring needs; and
  - Developing tools and resources to increase biodiversity and climate resilience stewardship outcomes among agricultural and private landowners, including Forest Stewardship Council (FSC) Certification and promoting woodlot economies.
- Launch a **Native Plant Seed Strategy Pilot** for seed zones associated with the GGH, and in collaboration with Indigenous Communities.
- Continue **pan-Canadian conversations** to advance the protection of nature and people's connection to nature in urban areas.

54m

Number of trees for which there is space and a need in the GGH

1. Introduction



1.1 Transforming our relations with nature

It's time to transform our relations with nature. Working together with the generosity we see in nature, we can create greener, healthier, more just, and more thriving communities while adapting to climate change. Natural areas ensure habitat for plants and animals, contribute to community resilience to extreme weather, provide important outdoor spaces for recreation, and support jobs, local economies, and community-building.

Faced with the dual biodiversity and climate crises, governments around the world, including those in Canada, are making bold commitments to protect nature, conserve biodiversity, and help communities adapt to climate change. New approaches to conservation are needed to achieve these goals, including interdisciplinary approaches, inclusion of Indigenous knowledge systems, a focus on equity, and participatory methods.[13] This shift must start by acknowledging interconnected issues and responding with swift action and a commitment to the capacity and resources needed to address them.

Looking to Indigenous Peoples and Communities for leadership and guidance, we can work to reconnect with the more-than-human world.

Wildlife populations are declining globally. Mammals, birds, fish, amphibian, and reptile populations have dropped by 68 per cent on average since 1970.[14] The biomass of humans and domesticated livestock on the planet now exceeds that of all wild birds, mammals, reptiles, and amphibians combined.[15] Activities in the Global North, such as increasing rates of consumption and urbanization, are driving exponential rates of biodiversity loss, pollution, and climate change. From 1992 to 2000 on a global scale, 16 per cent of habitat was directly lost to urbanization. Even greater losses are expected by 2030.[16]

Natural systems contribute to the resilience and health of nearby human communities. Nearby nature provides benefits like cleaner water and air or carbon storage.[17] But the functions of natural systems depend on their own relative health. Land use modifications and climate change are major stressors on natural systems. Systems that have greater biodiversity, including a diversity of genes, species, and ecosystems, are more resilient to these stressors. There is a close connection between conserving and supporting biodiverse and healthy ecosystems as the climate changes and the benefits they can provide to help communities adapt to these changes (see Figure 1.1).

Figure 1.1 *Biodiversity and climate change*

Biodiversity is directly related to ecosystem health.

Protecting and restoring biodiversity in near-urban ecosystems makes them healthier and more resilient to climate change.

Climate-resilient ecosystems protect nearby communities from climate-impacts like flooding or extreme heat.

Research suggests that the mass of human-made things now exceeds the biomass of all life on Earth.[18]

1.2 National and international targets for protecting biodiversity

Although some progress has been made on biodiversity protection, none of the 2010 Aichi Targets of the United Nation's Convention on Biological Diversity (CBD) were fully met by 2020. Biodiversity loss, pollution, and climate change interact in complex ways, but we know that the results will disproportionately affect some people and countries more than others.[19]

Nationally adapted Aichi Targets – including Canada's Target 1 to protect 17 per cent of lands and inland waters, and 10 per cent of marine and coastal areas of Canada – remained unmet by the end of 2020.[20] At that point, only 12.5 per cent of Canada's terrestrial areas were formally protected.[21] In Ontario, only 10.7 per cent was protected.[22] Quebec and British Columbia were the only jurisdictions to achieve the 17 per cent target and there remain questions about the accounting of recent progress made in British Columbia aside from the Indigenous-led protections[23].

Before the upcoming 15th meeting of the Conference of the Parties (COP15) of the Convention on Biological Diversity, currently scheduled for October 2021, and with the global High Ambition Coalition for Nature and People, Canada committed to conserving 25 per cent of its lands, freshwater, and oceans by 2025, working toward 30 per cent by 2030. The post-2020 biodiversity framework is due to be approved at the Convention on Biological Diversity's COP15. Climate discussions are also scheduled for 2021 at the United Nations Climate Change conference, COP26, and are expected to raise global ambitions for climate change adaptation.

At the 2020 UN Biodiversity Summit, the Leaders' Pledge for Nature was signed by 84 signatories, including Canada. The pledge includes a commitment to protect 30 per cent of lands and waters by 2030. This pledge, along with the United Nations Environment Program's new Making Peace with Nature report, highlights the urgent need for a change in our relationship with nature by moving away from siloed one-issue thinking to a more comprehensive approach to climate change, biodiversity loss, pollution, and human cultural, mental, and physical well-being.

Canada has made additional commitments to conservation, including the federal two billion trees commitment, to support restoration of Canada's natural areas by 2030. Canada and Ontario have also committed to recognizing and supporting Indigenous rights, responsibilities, and priorities in conservation through the One with Nature report by Canada's federal, provincial, and territorial departments responsible for parks, protected areas, conservation, wildlife, and biodiversity.

Before 2021, there was relatively little focus on achieving these objectives in southern Canada, a vast area that crosses many ecoregions.[24] Southern Canada requires strategies that differ from other Canada-wide approaches to biodiversity conservation. Fragmented landscapes, the high costs of land, and high levels of private ownership limit opportunities to protect large wildlife habitats. Competing pressures on the use of lands means actions and investments to protect and restore nature must deliver multiple benefits. The good news is that conserving near-urban nature offers immense opportunity for positive ecological and social outcomes that will benefit millions of people.

Through capacity funding from Environment and Climate Change Canada and support from the Province of Ontario via the Greenbelt Foundation, the Southern Ontario Nature Coalition (SONC) has identified opportunities for a Near-Urban Nature Network for the 3.2-million-hectare Greater Golden Horseshoe in Southern Ontario, which includes the country's largest Greenbelt and is a key terrestrial link between ecoregions and freshwater bodies in Ontario and the transboundary Great Lakes Basin (see Appendix A for more information on SONC).

Canada's Biodiversity Strategy and Targets (Pathway to Canada Target 1)

In 2010, a Strategic Plan for Biodiversity was adopted at the Conference of the Parties for the Convention on Biological Diversity. This plan included 20 global biodiversity targets, known as the **Aichi Targets**. Each party to the convention agreed to contribute to achieving the targets by 2020. Canada developed its own national targets, using the Aichi Targets as a guide.

In 2015, Canada adopted national targets known as the "2020 Biodiversity Goals and Targets for Canada." These four goals and 19 targets cover issues ranging from species at risk to sustainable forestry to connecting Canadians to nature.

The **Pathway Initiative** focuses on the terrestrial and inland waters of Canada through **Target 1**, based on Aichi Target 11. The initiative sets criteria and accounting and reporting methods for the Convention on Biological Diversity.

Canada has renewed and expanded commitments to conserve 25 per cent of its lands, freshwater, and oceans by 2025, working toward 30 per cent by 2030. References throughout this report to Target 1 refer to these area-based targets (which may change names if Canada updates its Biodiversity Strategy after 2020).

1.3 Near-Urban Nature Networks

Near-urban nature consists of the forests, river valleys, wetlands, grasslands, farmland, and other ecological features that surround and intersect our communities. This nature is critical to the health and well-being of communities and is one of our greatest opportunities for adapting to climate change.

Canada's population is already 80 per cent urban and expected to become even more urbanized in the coming decades.[25] Despite a seeming disconnect between urban living and the natural world, Canadians tend to have positive views toward action for climate and nature:

- 73 per cent support reducing greenhouse gas emissions[26]
- 90 per cent support nature-based climate solutions[27]
- 83 per cent consider access to green space a human right[28]
- More than 66 per cent think that visiting green spaces affects their quality of life[29]

The barriers to protecting near-urban nature are not underappreciation or a lack of awareness of nature's needs and benefits on the part of the public. The COVID-19 pandemic has highlighted the importance of nearby nature.[30] Yet despite incremental changes and progress toward protecting nature made in many communities (largely due to public support for nature), we are still failing to reverse the effects of years of neglect.

One barrier to change is that some decision makers respect, value, and trust technical fixes more than restoring relationships between ecological and social systems.[31] A good example is the amount of investment into grey (that is, human-made) engineered solutions to climate change adaptation (such as stormwater ponds) compared with protection and restoration efforts or low-impact development. For example, federal infrastructure funding programs (like those listed on the federal government's Investing in Canada Plan Project List) show that far more funding is going to grey solutions than to natural ones.[32]

Relying strictly on built or engineered solutions to deal with climate change can harm biodiversity, increase pollution, and ultimately reduce human well-being and quality of life – now and for future generations[33]. Decision making that honours reciprocal relationships between people and nature leads to solutions that tend to be less costly and more resilient. Natural solutions remain an underused option for addressing climate risk in Canada.[34]

In June 2021, Infrastructure Canada announced a $200 million Natural Infrastructure Fund, the first of its kind at the federal level. This a promising start to promoting natural solutions to climate change adaptation across Canada.

The International Union for Conservation of Nature (IUCN) defines an ecological network for conservation as:

a system of core habitats (protected areas, OECMs [Other Areas of Effective Conservation Measures] and other intact natural areas), connected by ecological corridors, which is established, restored as needed and maintained to conserve biological diversity in systems that have been fragmented.[35]

Our vision of Near-Urban Nature Networks builds on this definition and adds emphasis on well-loved landscapes that include areas of social and cultural importance in addition to ecological areas (see Figure 1.2). Connectivity is especially important in near-urban nature contexts where many natural areas have been lost and where roads, railways, and other barriers to movement are common. If planned and stewarded well, Near-Urban Nature Networks can support more healthy and resilient socioecological systems.[36]

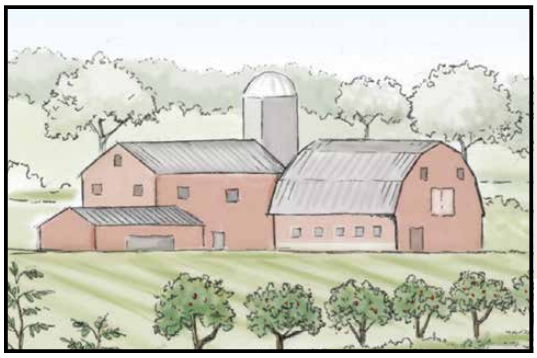
Figure 1.2 *Elements of a Near-Urban Nature Network.*

Identify priority areas for protection, restoration, and connectivity, taking into account their ecological, cultural, social, and economic significance and galvanize public support for conservation, stewardship and access to greenspace.

Draw on multiple knowledge systems and science to inform and **advance protection, co-governance, and co-management** of the lands, waters and wildlife under consideration.

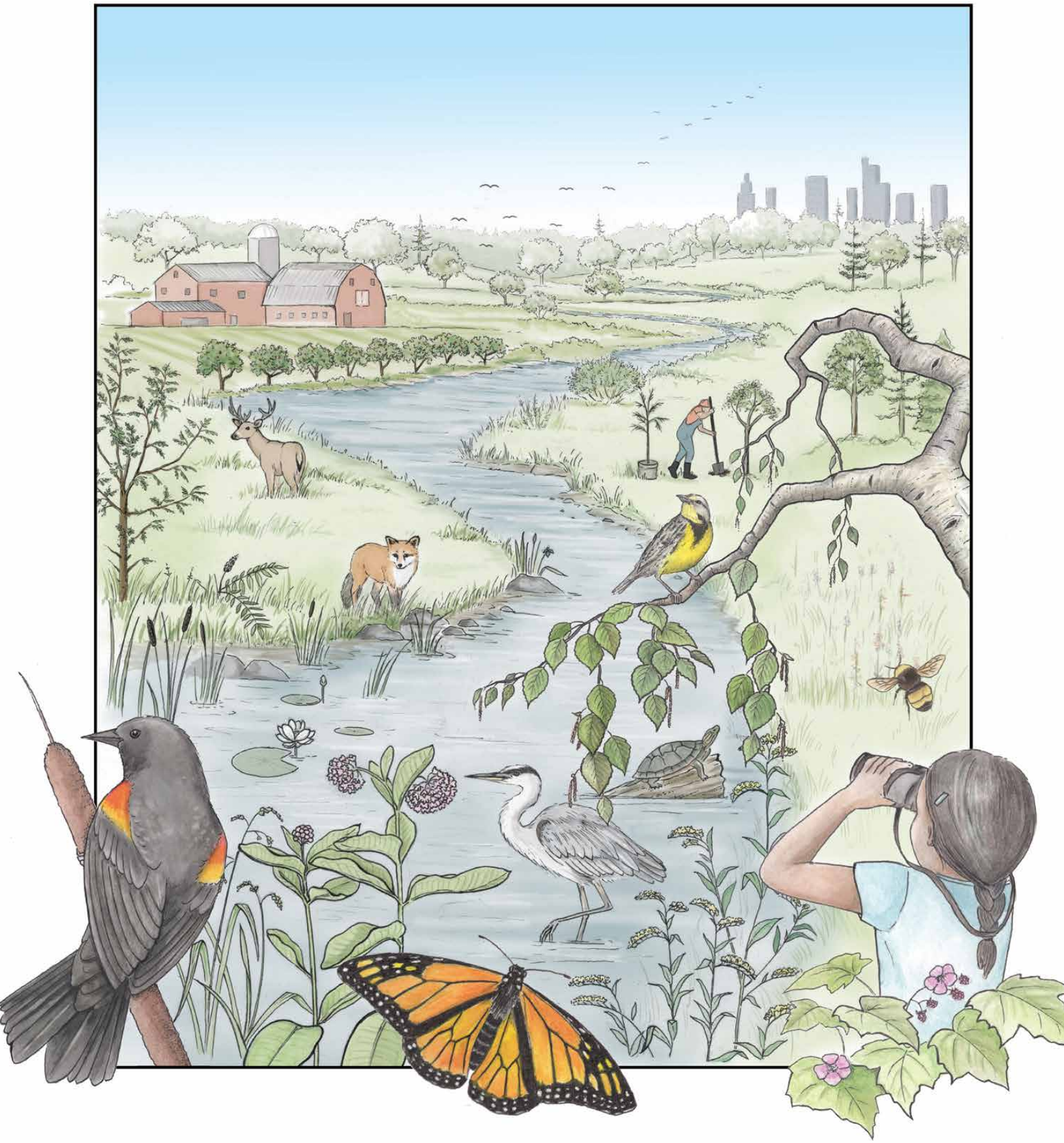
Engage Indigenous Communities, in accordance with Community protocols, and create an Ethical Space for Indigenous and non-Indigenous peoples to **contribute equally and meaningfully in decision-making processes**.

Develop cross-cultural understanding and actively engage everyone protecting the lands and waters upon which our health and well-being, and that of all life in the area, ultimately depend.



Support all landowners, including farmers and other agricultural landowners who are showing leadership, by enabling and supporting the protection of farmland and conservation action in their communities and on their lands.

Illustrations: Ann Sanderson



In the GGH, similar pressures associated with urbanization are impacting natural systems across municipal and watershed boundaries. This is a critical area for movement around the Great Lakes from the Carolinian Zone and the United States to central Ontario. Reduced ecological connectivity here can have ripple impacts on biodiversity, especially in the face of climate change. A regional Near-Urban Nature Network is needed to protect lands, waters, and the diversity of life so that communities can be resilient, healthy, and thriving.

This report identifies priority areas and approaches for protection, restoration, and connectivity taking into account their ecological, cultural, social, and economic significance.

Support for a Near-Urban Nature Network to address barriers

We heard a great deal of enthusiasm for the idea of a regional Near-Urban Nature Network for the GGH during our engagement process and the need for greater protection of existing natural areas. Issues include a lack of coordination as well as challenges faced when development pressure overrides the needs of nature.

A lack of municipal or government political support was identified as the top systemic barrier to expanding and enhancing the protection of near-urban nature by 77 per cent of conservation organizations and experts and by 79 per cent of land stewards.

An example from the Netherlands

Canada can learn from more urbanized countries that have already made progress on establishing Near-Urban Nature Networks for the climate resilience, human health, access to greenspace and economic benefits they can provide. In the highly urbanized Netherlands, the National Nature Network was set up to reduce fragmentation across the landscape, with a funded effort to establish protected areas and connectivity.[37]

Municipalities and partners such as Conservation Authorities are also key to successful and innovative approaches. The City of Amsterdam is taking a new approach to governance and economics by moving to a model that centres environmental and social considerations over strictly financial considerations guided by the “doughnut economics” model. The city has set a goal of achieving a fully circular economy by 2050.[38]

Doughnut economics, as described in a 2017 book of the same name by Kate Raworth, consists of two concentric rings: one is a social foundation that ensures that everyone has access to life’s essentials, and the other is an ecological ring to protect the planet’s life support.

1.4 Scope of this report

This report focuses on the trend that to date has put the most species and ecosystems at risk on the planet (including in the GGH), which is land use change and associated loss and fragmentation of habitat.[39] Other factors contribute to the loss of biodiversity (such as certain landscaping practices), and we touch on those factors, but land conservation and restoration are a prerequisite for a healthy natural environment.

+157%

The built-up area associated with urban census units in Canada grew 157 per cent from 1971 to 2011.[40]

The population and economy in the GGH benefit immensely from the biodiversity of the region. Because of the large population and economic activity, this region also has a disproportionately large ecological impact compared with other geographies across Canada. The pollution, waste, energy use, and other causes of biodiversity loss associated with GGH consumer lifestyles reflect and impact biodiversity declines across the country and around the world.

Canada has one of the largest per-capita ecological footprints in the world.[41] A Near-Urban Nature Network can help reverse this trend, by connecting more Canadians with nature and supporting local restoration economies. However, these actions alone are not enough. Stronger policies and larger cultural transformations are required.

1.5 How to read this report

This report presents the main findings of collaborative efforts of the Southern Ontario Nature Coalition (SONC) and its partners (see Appendix A). The research included literature and policy reviews and mapping, as well as guidance from Indigenous Peoples and Communities, local government staff, provincial and federal agency staff, Conservation Authority staff, conservation organizations, agricultural organizations, and community members (see Appendix B for a detailed description of the methods). We are grateful for their engagement and will continue these discussions.

Opportunities identified in this report would build on the success of Ontario's Greenbelt as a regional vision for the landscape in addition to other community-led or local environmental initiatives for biodiversity, climate resilience, and sustainable communities.

The primary geography of focus for this report is the Greater Golden Horseshoe, which can serve as a potential model for other urban regions across Canada.

The primary audience for this report is conservation organizations and community groups, Indigenous Peoples and Communities, federal, provincial, municipal governments, and Conservation Authorities. Other audiences include agricultural organizations and farmers, institutions, businesses, and private landowners.

During the research, many successful local initiatives came to the attention of the SONC partners. Taking inspiration from the natural world and the "Seeds of Good Anthropocenes" project,[42] we present these ideas throughout this report as seeds, recognizing that all ideas (like seeds) require specific local conditions to thrive and a successful approach in one community may not be appropriate in another (see Figure 1.3).

Figure 1.3 *Seeds of ideas for a Near-Urban Nature Network*

One project can produce many other seeds from which new ideas will grow

Projects and ideas grow where they are best adapted to the local conditions

People can tend to ideas and help them grow

People can share ideas

This report covers the following topics:

Section 2 identifies the principles underpinning our research, including an approach that respects and celebrates Indigenous rights and leadership.

Section 3 describes the status of biodiversity in the GGH, including threats and challenges and existing protection for nature.

Section 4 presents opportunities for creating new protected areas.

Section 5 presents opportunities for protecting, restoring, and stewarding network connectivity.

Section 6 describes ways to restore habitat in protected areas and ways to increase the supply of native plants in the GGH.

Section 7 describes opportunities for voluntary efforts to support conservation.

Section 8 identifies nature's benefits to people, including cultural, psychological, spiritual, social, and economic benefits.

Section 9 describes approaches and tools for developing a Near-Urban Nature Network that respects and centres inclusiveness and the rights of people and nature to thrive together.

Section 10 summarizes our recommendations.

Photo: Bill McDonald

2. Our approach and principles

2.1 Transformational change

In early 2020, 400 participants from across Canada gathered at the Nature-Based Climate Summit.[43] The final report of this summit stated that for protected areas in Canada, transformational change means:

i. *The identification, creation, and management of protected areas should come from relationships, consultation, conversations and collaboration with local communities, especially with Indigenous Peoples who live on the land, but also with urban and rural citizens who all care about nearby nature;*

ii. *A range of values should be considered, including the intrinsic value of nature, the importance of nature to human well-being, the value of connected protected area networks where both species and people can move and adapt to climate change, and the educational value of protected areas, especially in urban settings;*

iii. *Ensuring real protection with adequate resource for stewardship and effective management, with long-term financing for staff and Indigenous guardians;*

iv. *Understanding that while large relatively pristine wilderness, often in the North, is important for climate change mitigation and adaptation as well as for wildlife, small local areas, particularly in Southern Canada, can be of equal importance for biodiversity, climate change, human well-being, as well as for their educational value.*[44]

Taking a plural approach to valuing nature is increasingly seen as critical for transformational shifts in the approach to biodiversity.[45] Despite some progress on Canada's Biodiversity Targets in specific provinces (such as Quebec), traditional biodiversity conservation approaches have encountered many barriers and many targets remain unmet.[46] Across Canada and globally we are moving farther from the Convention on Biological Diversity's Vision of "Living in harmony with nature" by 2050, as progress on biodiversity targets is offset by ever-increasing consumption of land and resources.

"A transformative change is needed:
we cannot simply carry on as before."

LEADERS' PLEDGE FOR NATURE, 2020

2.2 Rights holders and ethical space

Our survey results identified a lack of diversity among decision makers in the formal conservation field in the GGH. We need to make space for and support diverse leaders to participate in these efforts, and specifically recognize the rights and leadership of Indigenous Peoples and Communities. Our work to date opens the way for a greater use of ethical space in continuing to learn and implement actions toward a Near-Urban Nature Network. Importantly, as treaty people, we all must continually work to uphold treaty obligations.

As defined by the government of Canada,

> *Treaties are agreements made between the Government of Canada, Indigenous groups and often provinces and territories that define ongoing rights and obligations on all sides.*
>
> *These agreements set out continuing treaty rights and benefits for each group. Treaty rights and Aboriginal rights (commonly referred to as Indigenous rights) are recognized and affirmed in Section 35 of the Constitution Act, 1982 and are also a key part of the United Nations Declaration on the Rights of Indigenous Peoples, which the Government of Canada has committed to adopt.*
>
> *Treaties with Indigenous Peoples include both:*
>
> - *historic treaties with First Nations*
> - *modern treaties (also called comprehensive land claim agreements) with Indigenous groups*

As rights holders, First Nations Communities whose territories cover the GGH have constitutionally recognized rights to the land. Settler governments, organizations, and communities have obligations to understand and uphold treaties with First Nations.

There are eight First Nations Communities located across the geography of the GGH and more Indigenous Peoples and Communities outside this boundary who have recognized treaty rights or Indigenous knowledge about these lands (Figure 2.1). For this project, engagement was initiated starting with the Williams Treaties First Nations, covering the northeast portion of the GGH.

The original treaties in the Williams Treaties territory stated (1923):" No Settler could occupy no more then the depth of the plow (6 inches), damage or destroy a sugar bush or occupy/destroy a lake, river or wetland or island."

The Williams Treaties new settlement (2017) states:

> *Ontario and its inhabitants must respect Indigenous rights and manage changes to them in accordance with s.35 of the Constitution Act, 1982. Ontario cannot uptake lands so as to deprive the FN signatories of a meaningful right to harvest in their traditional territory(s). All Ontario inhabitants must consult and accommodate these rights.*

"Maybe, we need to have more Elders and youth together sitting at the decision table when people make decisions about our lands and waters."

AUTUMN PELTIER, ANISHINABEK NATION CHIEF WATER COMMISSIONER

To date, 3 of the 7 Williams Treaties First Nations have been engaged in this project. To gain robust insight and perspective, all 7 Williams Treaties First Nation Communities and the other Indigenous Communities in the GGH should be actively engaged in efforts to implement a Near-Urban Nature Network. This engagement will require appropriate time and opportunity to understand the needs, capacity, resources, and priorities for each individual Community. Ethical space provides a guide for pursuing these engagements.

Ethical space[47] is:

> *a venue for Indigenous and non-Indigenous Peoples to meaningfully interact with one another in mutual respect of our distinct worldviews and knowledge systems, in order to collaborate, co-create solutions, and achieve common ground. We acknowledge we have more to learn on ethical space, though we understand it is not a new teaching. Instead, it reflects the historic way of engagement between Indigenous Peoples and settler society at the signing of the first treaties, which were founded in mutual respect and co-existence. The responsibility is on us all to re-create this shared space, which in some cases has been forgotten and undermined over the last 150 years.*

Undertaking conservation efforts in the spirit and practice of reconciliation, including the recognition of Indigenous rights in the GGH, is essential. The federal and Ontario governments have committed to this approach through their endorsement of the One with Nature report.

Near-Urban Nature Networks are an opportunity to engage and commit to Indigenous-led conservation as outlined in the Indigenous Circle of Experts' We Rise Together report. Part of this commitment is acknowledging that most previous non-Indigenous–led conservation efforts have not meaningfully engaged with Indigenous Communities.

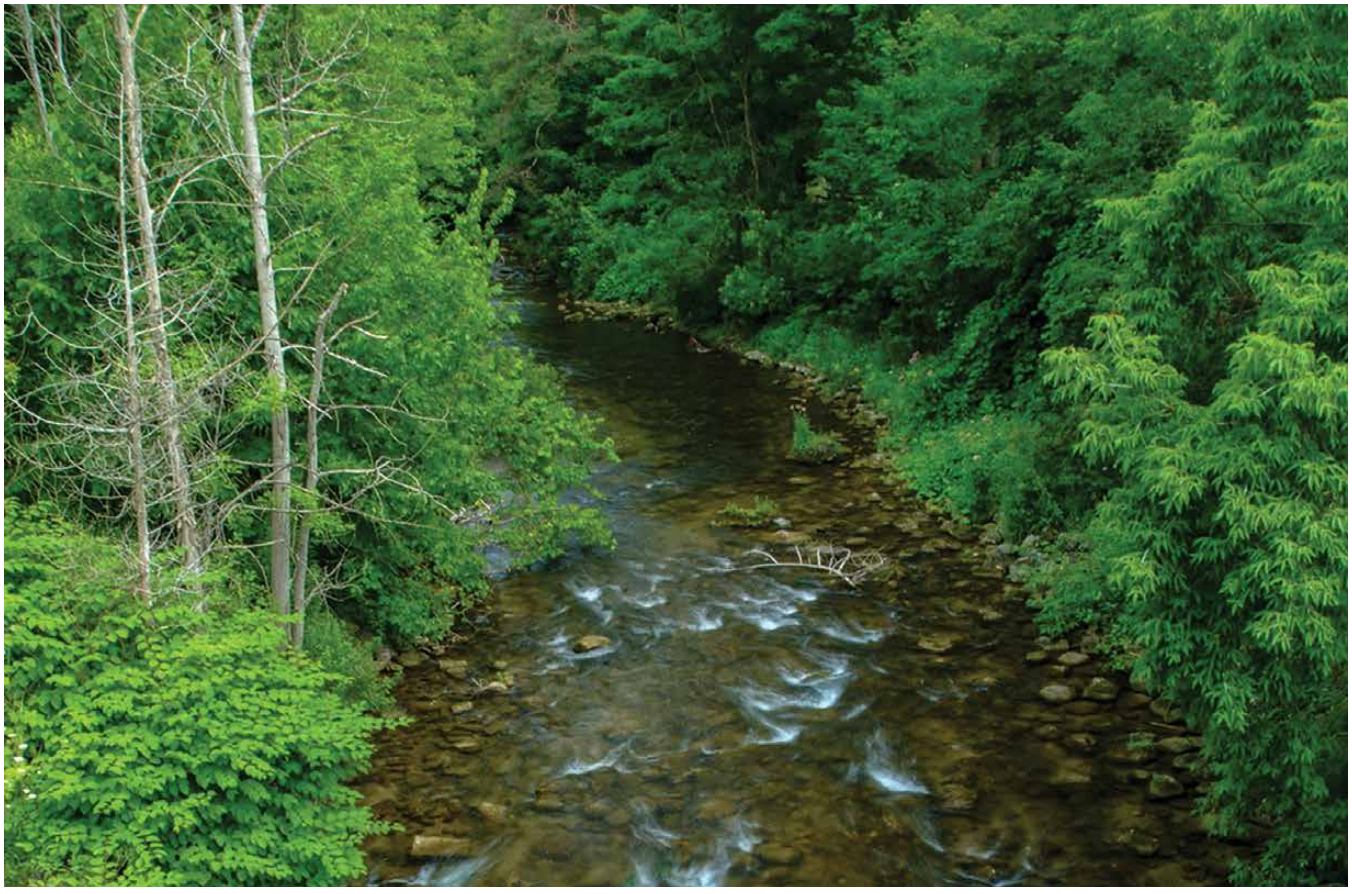
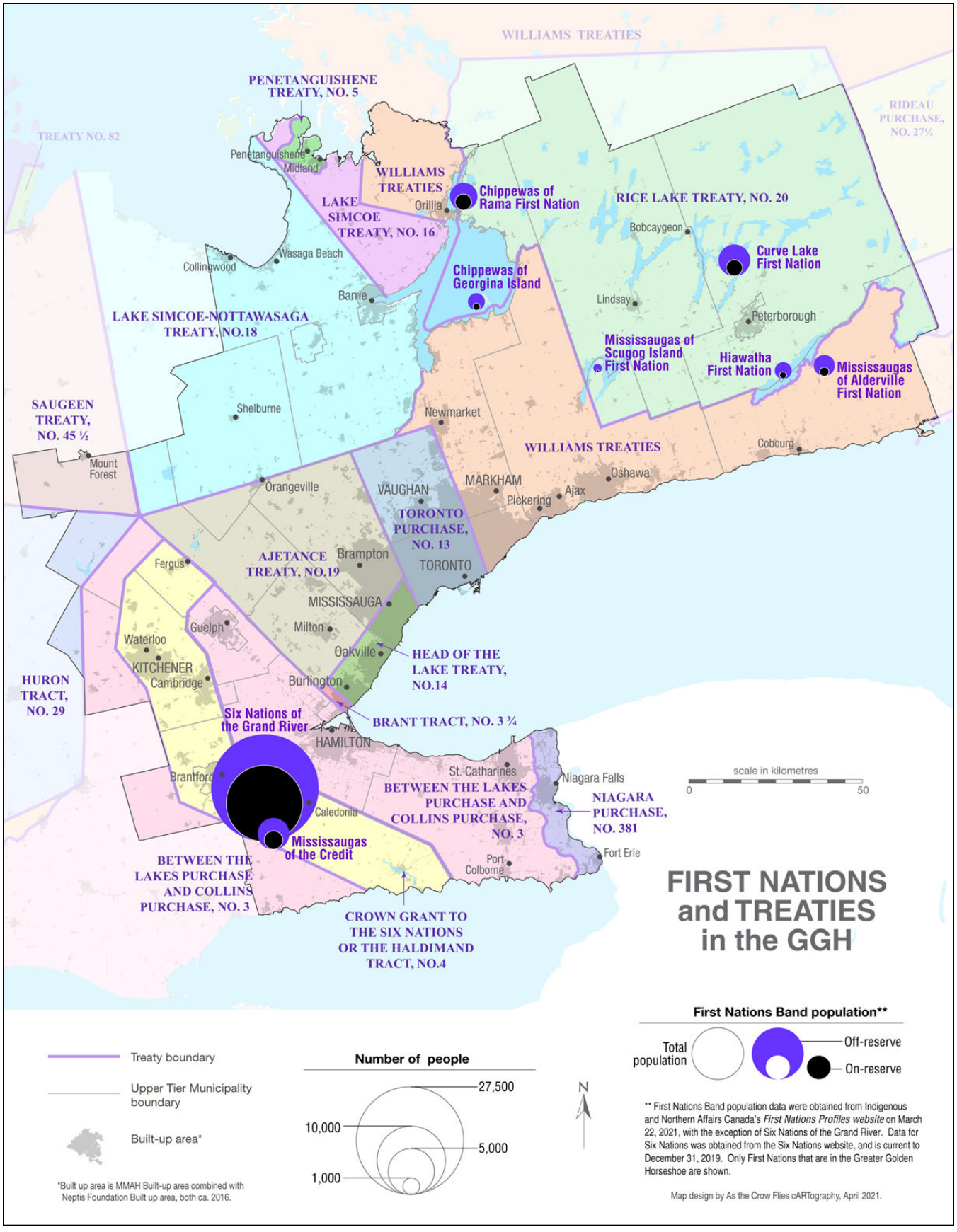


Figure 2.1 *First Nations and Treaty Lands in the Greater Golden Horseshoe. Note Beausoleil First Nation, within the Williams Treaties, sits just north of this boundary on an island in Lake Huron.*



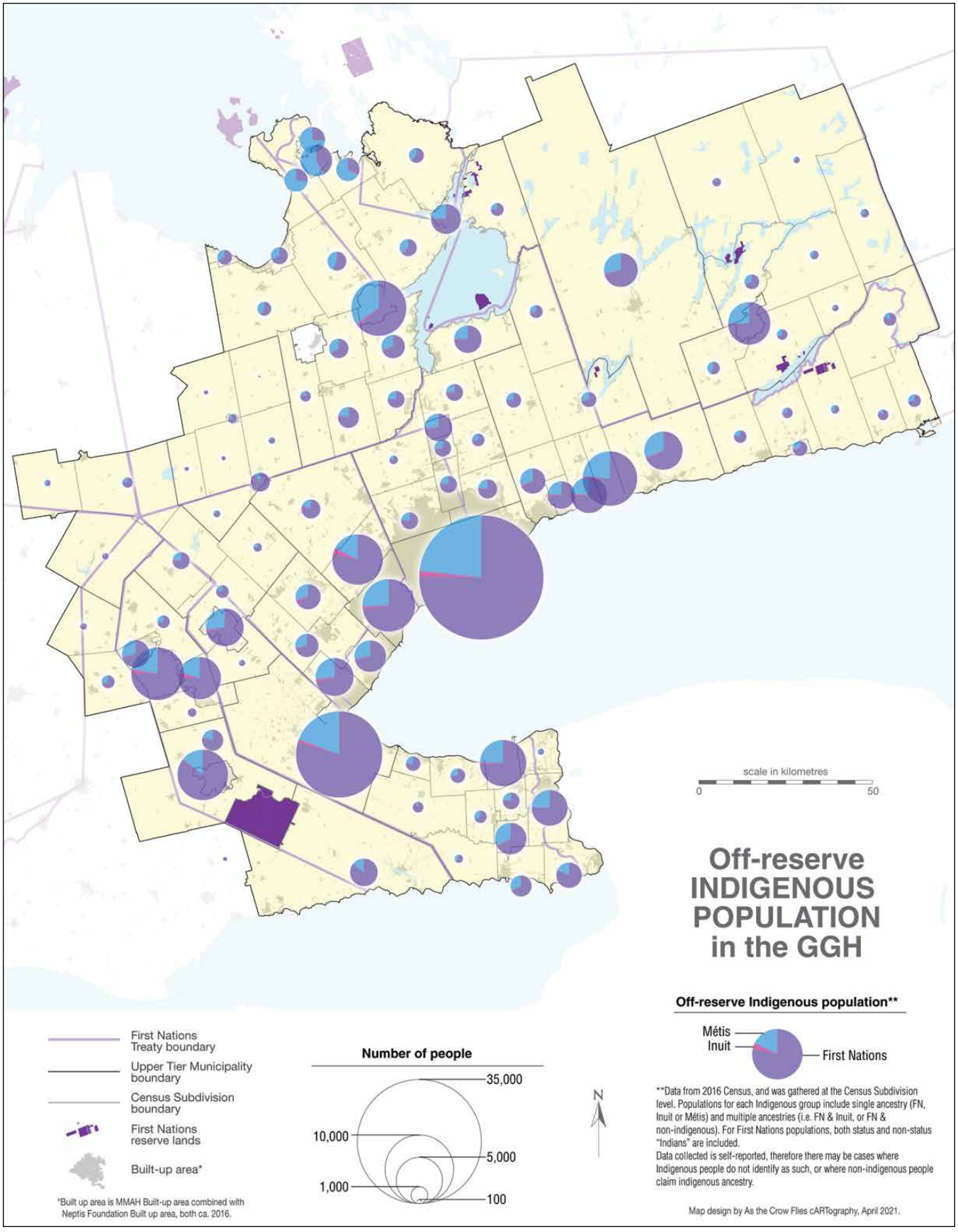
Meaningful engagement will require offering funding to Communities to support participation. Although these partnerships and relationships can benefit all involved, they often create additional workloads within the Indigenous Community. Care and effort are needed to ensure that those with the appropriate knowledge can participate meaningfully. Up to and sometimes more than half of the community members of a Nation live in urban centres and these members also need to be meaningfully engaged (see Figure 2.2).

Urban Indigenous Peoples can be engaged in many ways, as several Indigenous organizations provide services specifically for Indigenous Peoples, such as the Friendship Centres, Health organizations, and employment and training organizations that urban Indigenous Peoples use. Strategic planning and adequate funding must also be in place to support participation by both the organization that is assisting in coordination as well as for the appropriate Indigenous Peoples.

An immediate priority coming from the recent Missing and Murdered Indigenous Women and Girls National Action Plan is access to urban land-based activities for healing, ceremonies, social events, and positive community interactions. Access to land is central to the well-being of Indigenous Peoples. Near-urban nature plays a very large role in the GGH, where as Figure 2.2 shows, the largest populations of Indigenous Peoples reside in urban centres.

Photo: ©Jeff Dickie - Limehouse Conservation Area

Figure 2.2 *Off-reserve Indigenous populations in the Greater Golden Horseshoe*



Indigenous-led stewardship and monitoring programs and initiatives go by many names, an increasingly popular one being "Indigenous Guardians." Nature United's Indigenous Guardians Toolkit defines these programs as ones that *monitor, manage, and steward their lands and waters. Indigenous Guardians are "boots-on-the-ground" and act as the "eyes and ears" of the territory.*[48]

These programs can provide land-based learning, jobs, and other benefits. Different models of these types of initiatives across Canada are funded and supported by communities in different ways. Since 2017, the federal government has provided pilot funding for Communities interested in funding Indigenous Guardian programs. The 2021 federal budget proposed an expansion to this program. To date, none of this funding has gone to communities in the GGH. We heard that one administrative change that could make this program more appealing is to allow multiple Indigenous Communities to apply for funding together if they choose to do so.

The Conservation through Reconciliation Partnership by the IISAAK OLAM Foundation, the Indigenous Leadership Initiative, and the University of Guelph is a good example of an initiatives that recognize the need for and seeks to advance Indigenous-led conservation including in the GGH.

The Conservation through Reconciliation Partnership is a *"seven-year initiative that aims to critically investigate the state of conservation practice in Canada and support efforts to advance Indigenous-led conservation in the spirit of reconciliation and decolonization. The project is establishing a Canada-wide network to catalyse communication, coordination and reciprocal knowledge sharing amongst diverse partners, including Indigenous Communities and environmental organizations working to support Indigenous-led conservation. Our collective work seeks to meet emerging research needs and build capacity to support the establishment of Indigenous Protected and Conserved Areas and the transformation of existing protected areas to better align with Indigenous governance, knowledge systems and law. This initiative builds on foundations laid by the Indigenous Circle of Experts in their 2018 report We Rise Together."*[49]

Appendix C contains background information on Treaties in the Williams Treaties area.

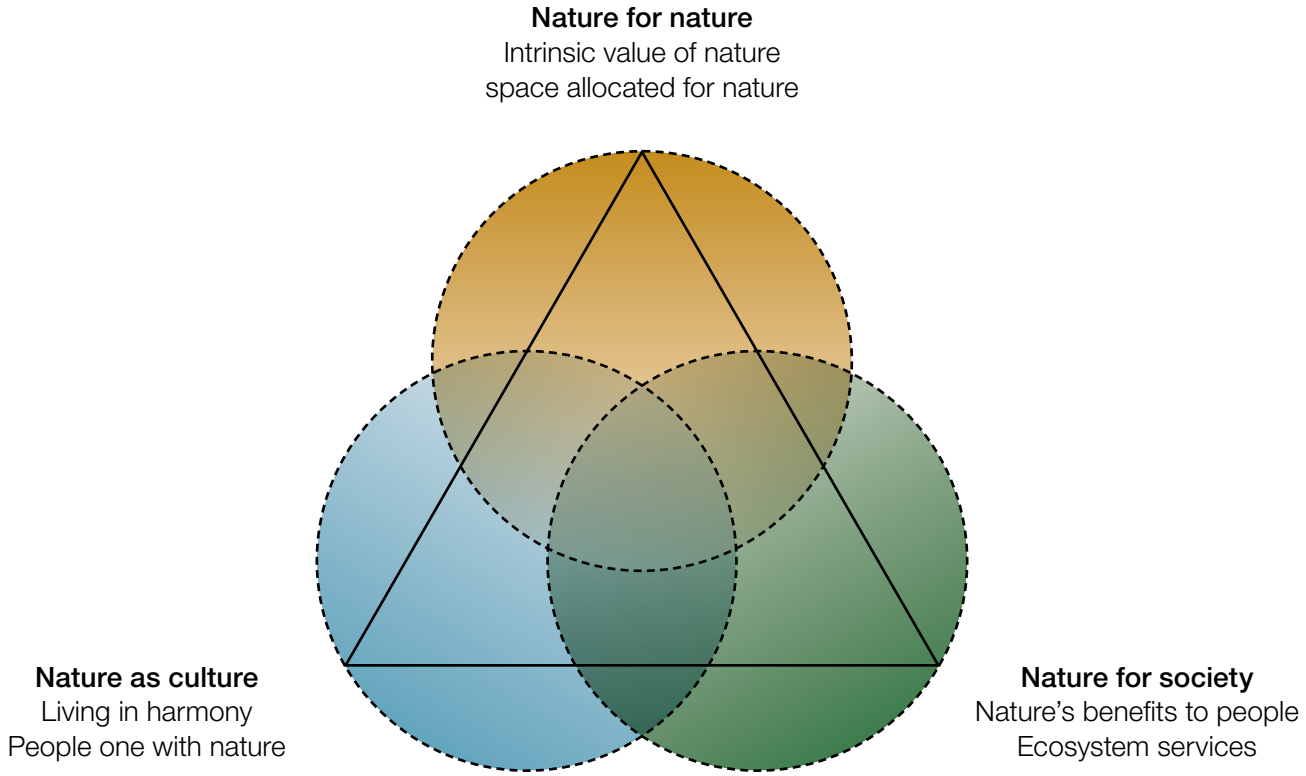
RECOMMENDATION

All governments and organizations should build internal understanding of Treaty rights and obligations and uphold these rights in all near-urban nature activities.

2.3 Diversity of relations to nature

People with different histories, experiences, and worldviews express a diversity of values related to nature. The Nature Futures Framework (see Figure 2.3) was developed to help explore scenarios for nature while acknowledging these different values, including nature as culture, nature for nature, and nature as a resource for society. Most people draw on all three perspectives, and values can change over time, but this framework is helpful in thinking about shared objectives for a future in which nature and people thrive.

Figure 2.3 *Nature Futures Framework*[50]



Pluralistic approaches can help break down "silos" of related but separate efforts in biodiversity, agriculture, climate, health, sustainable communities, and other areas. Staff at a conservation organization may have a different reason to support a Near-Urban Nature Network compared with someone working in public health, but both have good reasons to contribute. Acknowledging the many ways people relate to nature can help us to collaborate, build coalitions, and empower a diversity of perspectives that might otherwise be excluded from conservation and "land use" discussions.

Western conservation science is shifting to a more holistic interdisciplinary and systems approach to understanding the complexity of life, starting to learn from and converge on perspectives common to many Indigenous knowledge systems. Even fields that have traditionally viewed the value of nature as "other" from human societies, such as economics, are part of this shift.

In particular, there is a wider and growing recognition of the ways nature benefits society. For example, two 2021 reports – the Final Report of the Independent Review on the Economics of Biodiversity led by Professor Sir Partha Dasgupta and the United Nations Committee of Experts on Environmental-Economic Accounting's System of Environmental-Economic Accounting–Ecosystem Accounting – highlight the social benefits of nature, including promoting human health, providing jobs, and contributing to climate resilience. The reports also stress the impacts of large-scale engineered infrastructure on nature and the need to end subsidies to nature-destructive industries and activities. These reports suggest the potential for systemic changes in the relationships between people and nature.

Nature as culture is probably the least represented in non-Indigenous conservation efforts to date and there is growing recognition of the importance of recognizing relational values to nature. Indigenous Peoples and Communities have long understood these values and their leadership and teachings will be critical to the success of a Near-Urban Nature Network.

Alderville Elder Rick Beaver shared the following description and image (see Figure 2.4) for the vision of the Near-Urban Nature Network:

As parents (or grandparents) are engaging their children or grandchildren about G'chi Manidoo (the Great Spirit) and the many mysteries of life, the young ones always need to know why. "What are relations/connections? Why are they important? Are we connected to plants and animals too? Always "Why?" or "How?"

The Near-Urban Nature Project presents an opportunity to examine the connections. An Indigenous person always ends their ceremony by giving thanks with this phrase "All my relations"...a reminder to keep connected with the gifts of Creation...with balance, respectful acknowledgement, love, bravery, honesty, truth, humility and the achievement of wisdom. Those teachings were called grandfathers as that is how they were originally transmitted. The first law for humanity is to always care for the Earth. The Grandfather teachings remind us of that duty and how to accomplish it. I have personified that in this image with the inclusion of brother (and sister) hood, teaching, elements of nature and the circle binding all life together in our shared travels and destiny. Water, important for all life flows across the red blanket. Symbols of growing things are represented by the short and tall green grasses. The Near-Urban Nature Project is referenced both by the symbols of living things (bear paw, deer) and the urban landscape (cityscapes).

The attempt I share now is called "Tell us about Relations".

Rick Beaver
June 2021

Figure 2.4 *Original art by Rick Beaver for the Near-Urban Nature Network project: "Tell Us About Relations"*

In discussions with representatives from Curve Lake and Hiawatha First Nations, a couple of teachings emerged as potential guidance or frameworks for a Near-Urban Nature Network: the seven grandfather teachings and the medicine wheel. Both are well known and have various iterations in Anishinaabe cultures, but the concepts and values are usually similar from one Nation to another. These are shared with permission here as examples of frameworks to guide this work, acknowledging that they reflect Anishinaabe teachings and are not all encompassing of Indigenous cultures in the GGH.

Seven Grandfather Teachings

The Seven Grandfather Teachings encompass the morals, values, structures, ceremonial practices, and spiritual beliefs of the Anishinaabe People. These teachings ensured the survival of the People and reflect what we all strive for in life, which is to live a good life or *Mno Bmaadzawin*. If all strive to live life following these seven principles a good life is obtainable for all.

1

Humility is represented by the **wolf**

For the wolf, life is lived for the pack and the ultimate shame is to be outcast. Humility is to know that you are a sacred part of creation. Live life selflessly and not selfishly. Respect your place and carry your pride with your people and praise the accomplishments of all. Do not become arrogant and self-important. Find balance in within yourself and all living things.

2

Courage is represented by the **bear**

The mother bear has the courage and strength to face her fears and challenges while protecting her young. The bear also shows us how to live a balanced life with rest, survival, and play. To face life with bravery is to know courage. Find your inner strength to face the difficulties of life and the courage to be yourself. Defend what you believe in and what is right for your community, family, and self. Make positive choices and have conviction in your decisions. Face your fears to allow yourself to live your life.

3

Honesty is represented by the **Sasquatch**

He understands who he is and how to walk in his life. He reminds us to be ourselves and not someone we are not. An honest person is said to walk tall like the Sasquatch who accepts himself and knows how to use his gifts. He does not seek the power, speed, or beauty of others. He uses what he has been given to survive and thrive. To walk through life with integrity is to know honesty. Be honest with yourself. Recognize and accept who you are. Accept and use the gifts you have been given. Do not seek to deceive yourself or others.

Wisdom is represented by the **beaver**

… who uses natural gifts wisely for survival. The beaver also alters the environment in an environmentally friendly and sustainable way for the benefit of his family. To cherish knowledge is to know wisdom. Use your inherent gifts wisely and live your life by them. Recognize your differences and those of others in a kind and respectful way. Continuously observe the life of all things around you. Listen with clarity and a sound mind. Respect your own limitations and those of your surroundings. Allow yourself to learn and live by your wisdom.

Truth is represented by the **turtle**

The turtle was here during the creation of Earth and carries the teachings of life on his back. The turtle lives life in a slow and meticulous manner because he understands the importance of both the journey and the destination. Truth is to know all of these things. Apply faith and trust in your teachings. Show honour and sincerity in all that you say and do. Understand your place in this life and apply that understanding in the way that you walk. Be true to yourself and all other things.

Respect is represented by the **Buffalo**

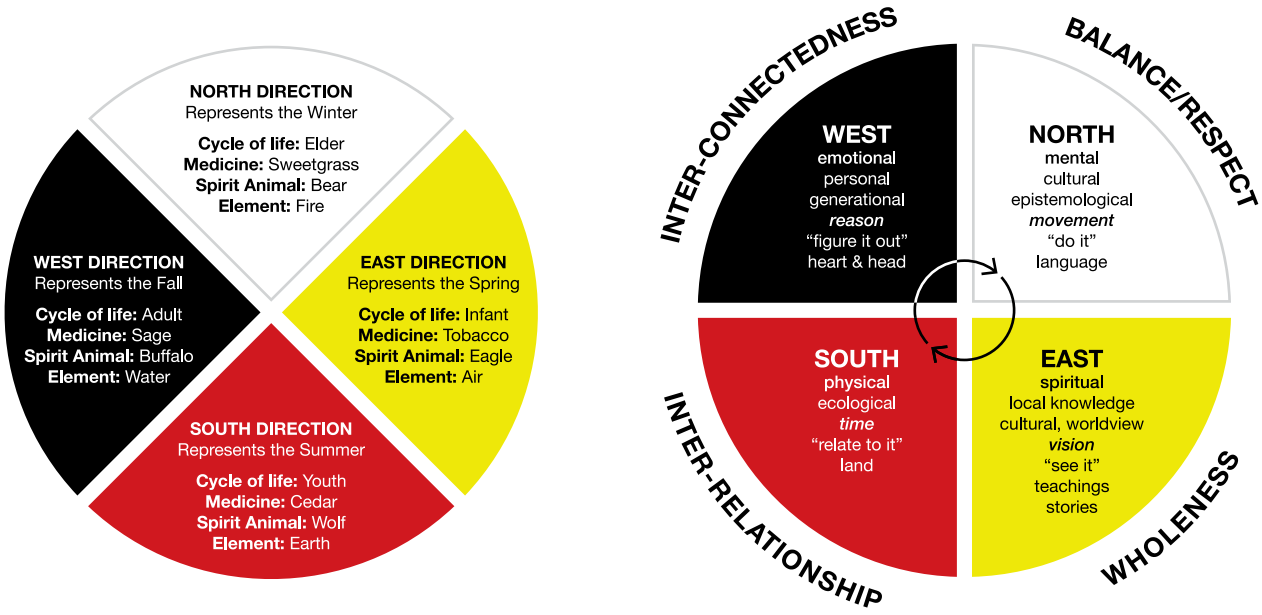
The buffalo gives every part of his being to sustain the human way of living, not because he is of less value, but because he respects the balance and needs of others. To honour all creation is to have respect. Live honourably in teachings and in your actions towards all things. Do not waste and be mindful of the balance of all living things. Share and give away what you do not need. Treat others the way you would like to be treated. Do not be hurtful to yourself or others.

Love is represented by the **Eagle**

… because he has the strength to carry all the teachings. The eagle has the ability to fly highest and closest to the creator and also has the sight to see all the ways of being from great distances. The Eagle's teaching of love can be found in the core of all teachings, therefore an eagle feather is considered the highest honour and a sacred gift. To know love is to know peace. View your inner self from the perspective of all teachings. This is to know love and to love yourself truly. Then you will be at peace with yourself, the balance of life, all things and also with the creator.

The Medicine Wheel (see Figure 2.5) is a little more complex than the Seven Grandfather Teachings, as several teachings are encompassed within it, as well as variations of those teachings. Each is meant to assist in understanding the interconnectedness of life and ways of overcoming the challenges that life brings amongst others things.

Figure 2.5 *Example understandings of the medicine wheel teachings*



Reflecting on these teachings and what they represent can help us in this initiative, such as using the quadrants to assist in areas of focus and how this work connects in a holistic way to all other initiatives (biodiversity targets; mental, emotional, physical, and spiritual health, and overall well-being; climate change; equity and diversity).

Teachings vary from place to place and community to community. Although the concepts and the values will likely be similar, it will be imperative to ensure that if the teachings are used as a guide, they are used appropriately. Those knowledgeable from both the Indigenous Communities and the urban Indigenous Peoples should determine which elements to apply.

In continuing to build the Near-Urban Nature Network, needs identified through discussions with Hiawatha and Curve Lake First Nations can help to guide ongoing engagements. These include:

- Consult urban Indigenous Peoples
- Remember: We are all treaty people, we are all ancestors for the future generations
- Work on restoration, the connectivity of lands/areas, coldwater streams, protection of wetlands
- Protect harvesting rights and consider the potential impact that new protected lands could have on access for harvesting
- Conduct Williams Treaties Traditional Ecological Knowledge and biocultural mapping studies
- Monitor and maintain areas in addition to protecting the areas
- Complete cumulative effects study
- Include restoration and maintenance in the strategy; planting that takes place after a project is completed should use native species
- Involve more Community members for large future projects
- Be mindful that although the Williams Treaties First Nations settled the claim, the First Nations are still in the implementation phase and probably will be for years to come
- Approach the leadership of the Williams Treaties First Nations and Community members to sit at engagement tables
- Develop an inventory of individuals who have expertise in education, Knowledge Holders, and other areas.

The process of colonization, including the removal of Indigenous Peoples and Communities from their territories and the ongoing injustices endured by Indigenous Peoples, are the most obvious and abhorrent examples of a loss of cultural values and relationships with the land in this region. Residential schools, forced relocations, and the suppression of native languages greatly harmed Indigenous Peoples and their relations with the land.

With the leadership of interested Indigenous Peoples and Communities, and a commitment to acting meaningfully in the spirit and practice of Truth and Reconciliation, settler organizations and governments can learn from and support Indigenous-led projects and programs, including funding or capacity support for land-based cultural learning to Indigenous Peoples and Communities.

2.4 Systems approach

The United Nation's Making Peace with Nature report asserts that the environmental crises of biodiversity loss, climate change, and pollution should be addressed at the same time as social inequities. Projects aimed at improving biodiversity outcomes should also identify opportunities to make progress on (or at the very least not worsen) other environmental and social issues. Efforts to protect, connect, and enhance a Near-Urban Nature Network can bring many benefits that support these other priorities as well as the identified priorities of the federal government.

"It is well established that healthy ecosystems and biodiversity are fundamental to supporting and sustaining our well-being, our local communities and our economies. However, our environment is under pressure and there are consequential risks that we face in securing and improving our livelihoods… In addition, there has been growing recognition that the degradation of nature is not purely an environmental issue requiring environmental policy responses. Thus, decision makers across all sectors need to consider their environmental context and the associated dependencies and impacts."

SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTING–ECOSYSTEM ACCOUNTING (2021), UNITED NATIONS

Recommendation 21 of the *We Rise Together* report is that federal, provincial, and territorial governments, philanthropic organizations, academia, environmental NGOs, and industry "undertake a whole-of-government approach and break down silos to increase transparency."[51] This would mean that different departments or organizations come together and communicate clearly and openly with interested Indigenous Peoples.

Near-Urban Nature Networks also offer governments a good opportunity to address multiple priorities and use a whole-of-government approach to achieve more effective outcomes. For example, a natural infrastructure project like a wetland restoration to reduce flood risk could also provide new wildlife habitat and green space for recreation. Through the leadership and engagement of Indigenous Communities within the framework of ethical space (and with adequate funding to compensate those involved), efforts to establish a Near-Urban Nature Network could also be a step along the path of reconciliation.

Figure 2.6 identifies high-level federal priorities relating to Near-Urban Nature Networks. Action on these priorities could take many forms, depending on the ecological, social, and cultural context. Decisions about development (such as housing, transportation, or aggregates) should be informed by an understanding of how an area is currently providing value, not just today but also in future climates.

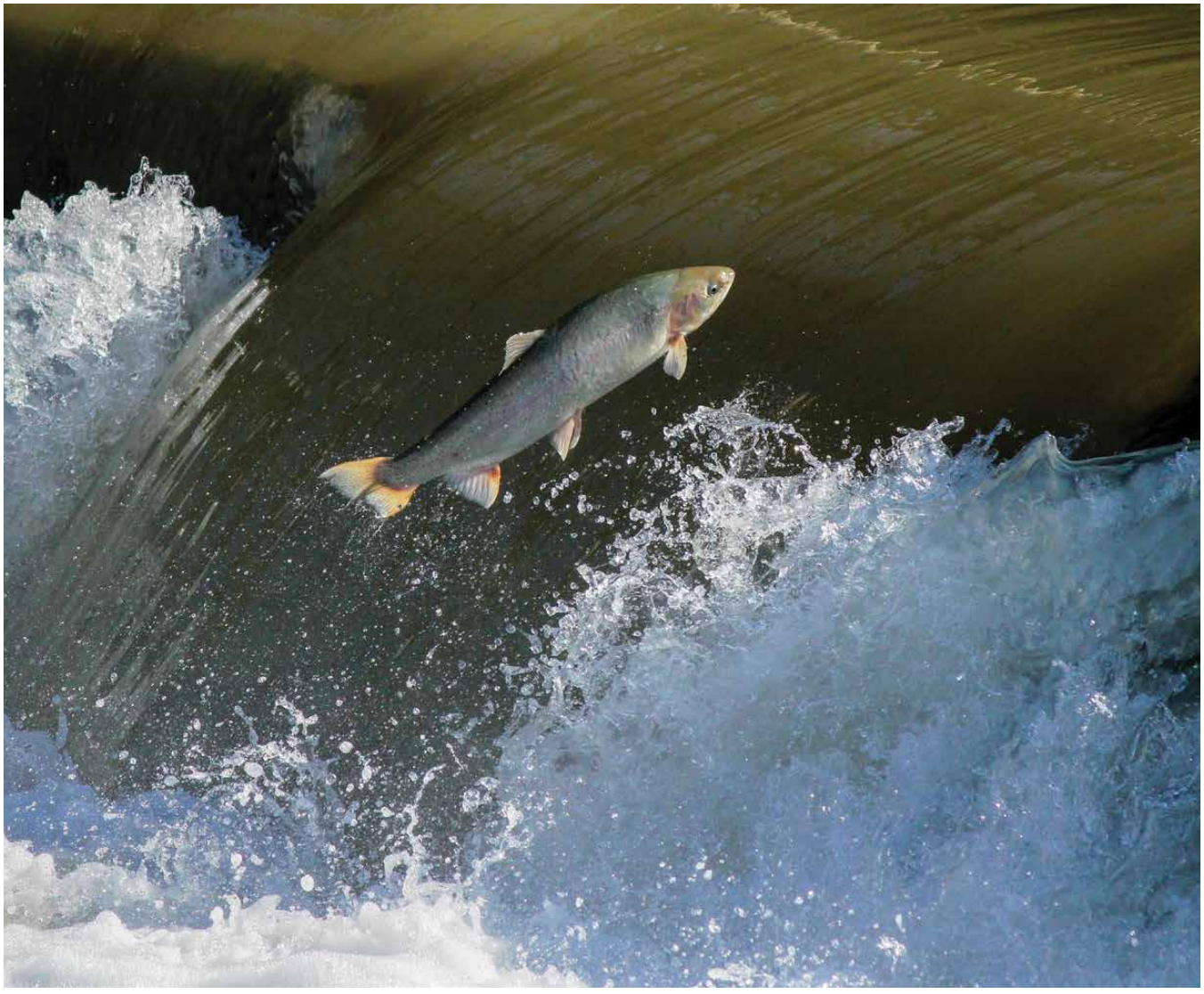
Figure 2.6 *Near-urban nature networks have the potential to address many priorities*

For example, some isolated and ecologically degraded urban natural areas provide important municipal services that are overlooked in financial decisions. Protecting, restoring, and reconnecting (if possible) these natural areas can enhance these services while improving ecological function. In other cases, areas with high ecological values with species sensitive to human activities may require management strategies to reduce recreational pressure in sensitive areas.

2.5 Short- and long-term opportunities

Some actions to develop the Near-Urban Nature Network can and should be taken quickly. Other actions require time and may not have an end (such as establishing and maintaining relationships). Tight project timelines and funding cycles can get in the way of providing ethical space and engaging with Indigenous Peoples and Communities meaningfully.

Long-term thinking and building relationships are needed for reconciliation and achieving more inclusive planning processes. While action can begin on all opportunities identified in this report, in some cases it will take time before outcomes are evident.



2.6 Wider engagement

The SONC partners, with ReConnect consulting, hosted online workshops and administered online surveys, as well as key informant interviews by phone in fall 2020.

Four workshops, 247 participants and 66 organizations represented

Four workshops were held, tailored to different groups: (1) a general audience of environmental organizations, (2) municipality staff, (3) Conservation Authority staff, and (4) land stewards (landowners, agricultural organizations, and land managers).

Two surveys, 116 total responses and 48 organizations represented

Two surveys were developed. One was completed by conservation organizations and experts and the other survey by land stewards (including municipal staff, Conservation Authority staff, land trusts staff, and private landowners). Survey participants were generally between the ages of 31 and 65. Of the respondents, 91 per cent of land stewards and 84 per cent of conservation organization staff identified as white.

12 key informant interviews with provincial and national organizations

Interviews were used to gather in-depth information on topics of special interest, such as natural assets and natural infrastructure, public use of trails, corridors and connectivity of natural areas, priorities for conservation in southern Ontario, status of insurance and other financial instruments, and stewardship among farmers and other landowners. Interviewees were drawn from the following 12 organizations:

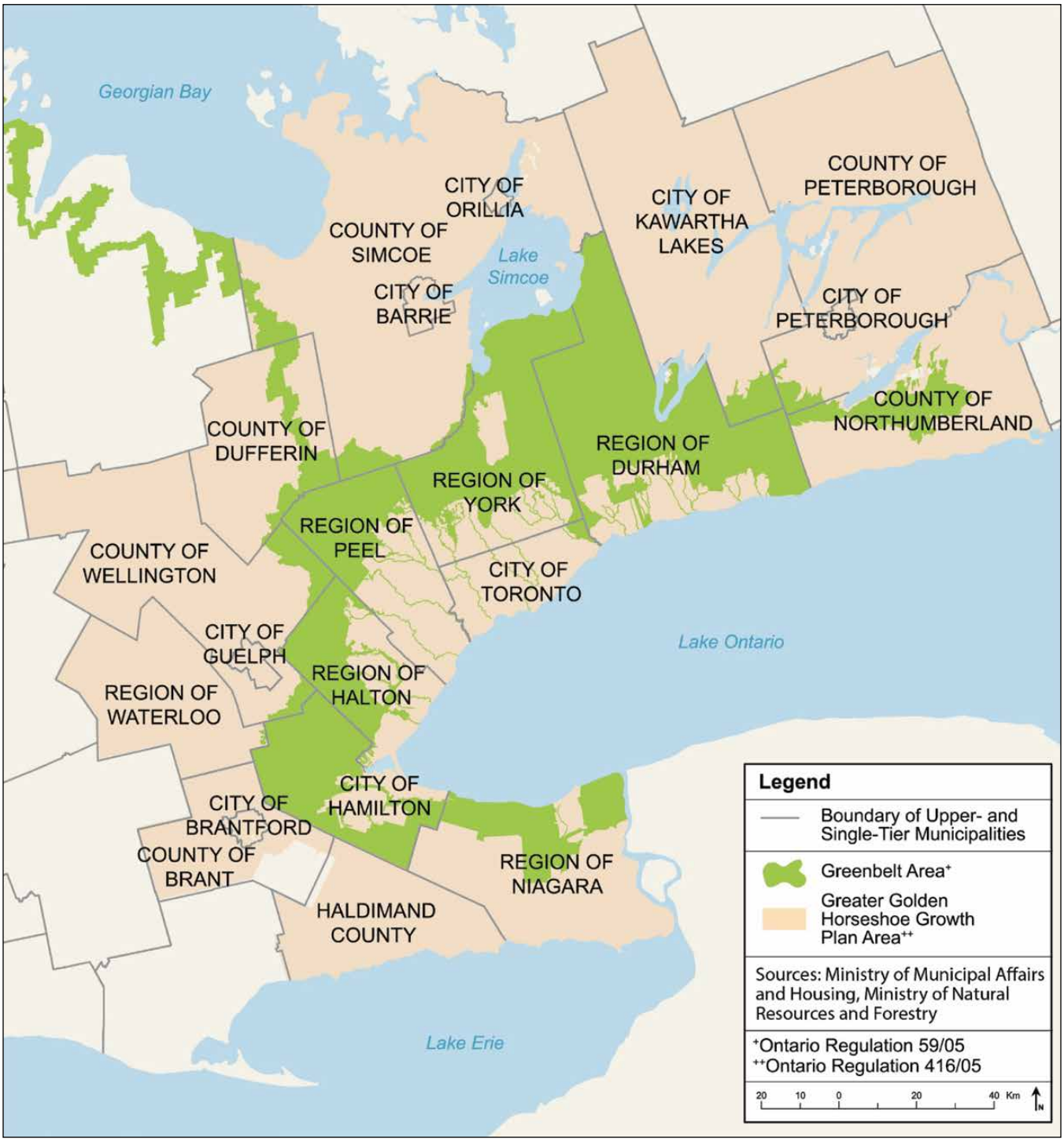
Conservation Ontario
Ducks Unlimited (Ontario)
Forests Ontario
Insurance Bureau of Canada
Intact Centre on Climate Adaptation
ICLEI Canada
Municipal Natural Assets Initiative
Nature Conservancy of Canada
Ontario Soil and Crop Improvement Association
Parks Canada
Smart Prosperity Institute
The Trans Canada Trail

3. The current state of biodiversity in the Greater Golden Horseshoe

3.1 A high concentration of biodiversity and people

Southern Ontario's Greater Golden Horseshoe (GGH) is one of the most biodiverse areas in the country. The GGH is also Canada's most densely populated and rapidly urbanizing region, with a current population of 10 million, expected to rise to 15 million by 2051.

Figure 3.1 *Ontario's Greater Golden Horseshoe Region and Greenbelt*[52]



Quick facts about biodiversity in the Greater Golden Horseshoe:

- About 30 per cent terrestrial natural cover, including forests, wetlands, and savannahs, still exist in the GGH (based on our analysis).
- The GGH has extremely high native plant diversity compared with the rest of Canada.
- The GGH falls entirely within Canada's smallest and least protected EcoZone, the Mixed Wood Plains,[53] which has a moderate climate and an abundance of water supporting a diversity of ecosystems and species.
- On a continental scale, according to a recent report by One Earth, the GGH has been categorized as part of the Southern Great Lakes Forest, one of the "most highly converted and imperilled ecoregions on the continent" and the Eastern Great Lakes Lowland Forests which has "lost over 95% of its pre-settlement vegetation to agriculture, urban sprawl, and other human land uses."[54]
- More than a third of Ontario's species at risk (such as Redside dace and Blandings turtle) are found in the region; habitat loss is the most common threat. Many culturally significant species and habitat are also found in the GGH, including Eastern white cedar and habitat for Atlantic salmon.
- The GGH is an important migratory bird corridor and a route for terrestrial movement around the Great Lakes for wildlife such as bobcats.[55]

The Great Lakes hold an estimated 21 per cent of the world's surface freshwater.[56] The GGH sits in the southeast of the Great Lakes Basin, specifically within the East Lake Huron, East Georgian Bay, North Lake Erie, and Lake Ontario watersheds. Although this setting supports a high quality of life for residents and underpins the region's rich biodiversity, scientists have identified climate change as a top threat to North America's Great Lakes, highlighting the pressing need to work binationally with the United States, for example, through the Great Lakes Water Quality Agreement.[57]

This region has some of the province's most fertile soils, contributing to a healthy local food system that also faces threats from climate change and urban development.[58]

The GGH is home to natural and cultural heritage assets, such as the Oak Ridges Moraine, major river valleys, and connections to three of the Great Lakes. Some of these unique landscapes and natural features are of national and global significance, like the Niagara Escarpment, a designated United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Biosphere Reserve.[59]

Biodiversity is well documented in the GGH. The following reports focus on the state of biodiversity in southern Ontario and the Greenbelt:

- Environment Canada and the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry's Canadian biodiversity: Ecosystem Trends 2010 Mixed Wood Plains Ecozone[60]
- Ontario Biodiversity Council's Indicator reports[61]
- Ontario Nature and David Suzuki Foundation's Biodiversity in Ontario's Greenbelt[62]
- Conservation Ontario's watershed report cards[63]

A vast amount of information is also contained in municipal and watershed plans, reports, and policy documents from municipalities and Conservation Authorities. Despite the abundance of information about the species and ecosystems at a high level in this region, gaps remain, including those associated with conditions on private lands, which make up most of the region.

Toronto and Region Conservation Authority's new environmental conditions reporting app[64] is a great example of information sharing that can advance conservation efforts in the region. The interactive app reports on environmental indicators such as natural and impervious cover, species richness, climate risks, and the presence of rare species.

The GGH is heavily populated, which offers economic advantages while putting pressure on the environment.

The GGH's "people advantages"

Government agencies and institutions

- Parks Canada and Ontario Parks: two important Protected Areas are Rouge National Urban Park and Queen Elizabeth II Wildlands Provincial Park
- Fourteen Conservation Authorities, Ontario's model of watershed-based agencies with innovative regulatory approaches and expertise, which have adapted a regional lens through the Greenbelt and Golden Horseshoe Conservation Authority Collaborative.
- Postsecondary universities and colleges

Indigenous Peoples and Communities

- Many Indigenous Communities, Indigenous organizations, and a large urban Indigenous population

Regional land use planning framework

- Existing provincial plans that foster and support a regional outlook on protecting agricultural, natural heritage and water resource systems
- Provincially funded Greenbelt Foundation to champion the objectives and success of the Greenbelt

Civil society

- Several long-term community coalitions and grassroots efforts to protect and restore nature and recognize community benefits, such as Land Trusts, Ontario Nature's Nature Clubs, the Ontario Greenbelt Alliance, and EcoHealth Ontario
- A history of land stewardship in protecting farmland and natural heritage
- Largest proportion of population and economic activity across Canada able to engage, learn the benefits of near-urban nature, and build momentum and support change

A large and diverse population, most of whom live in urban centres like Toronto, Hamilton, Waterloo, and Mississauga, creates demand for the benefits – or "ecosystem services" – that nature provides, such as recreational benefits. More than 40 rural towns, villages, and hamlets rely on these natural landscapes and farm fields for their economic health, including a robust agriculture industry, outdoor recreation, culinary tourism, and fishing and hunting.

Despite the demand for recreational opportunities in the GGH, the landscape has a relatively low capacity to provide this type of ecosystem service, compared with the rest of Canada, which leads to issues of pressure on natural areas and an unmet need for more recreational greenspace, which ultimately impacts public health and well-being.

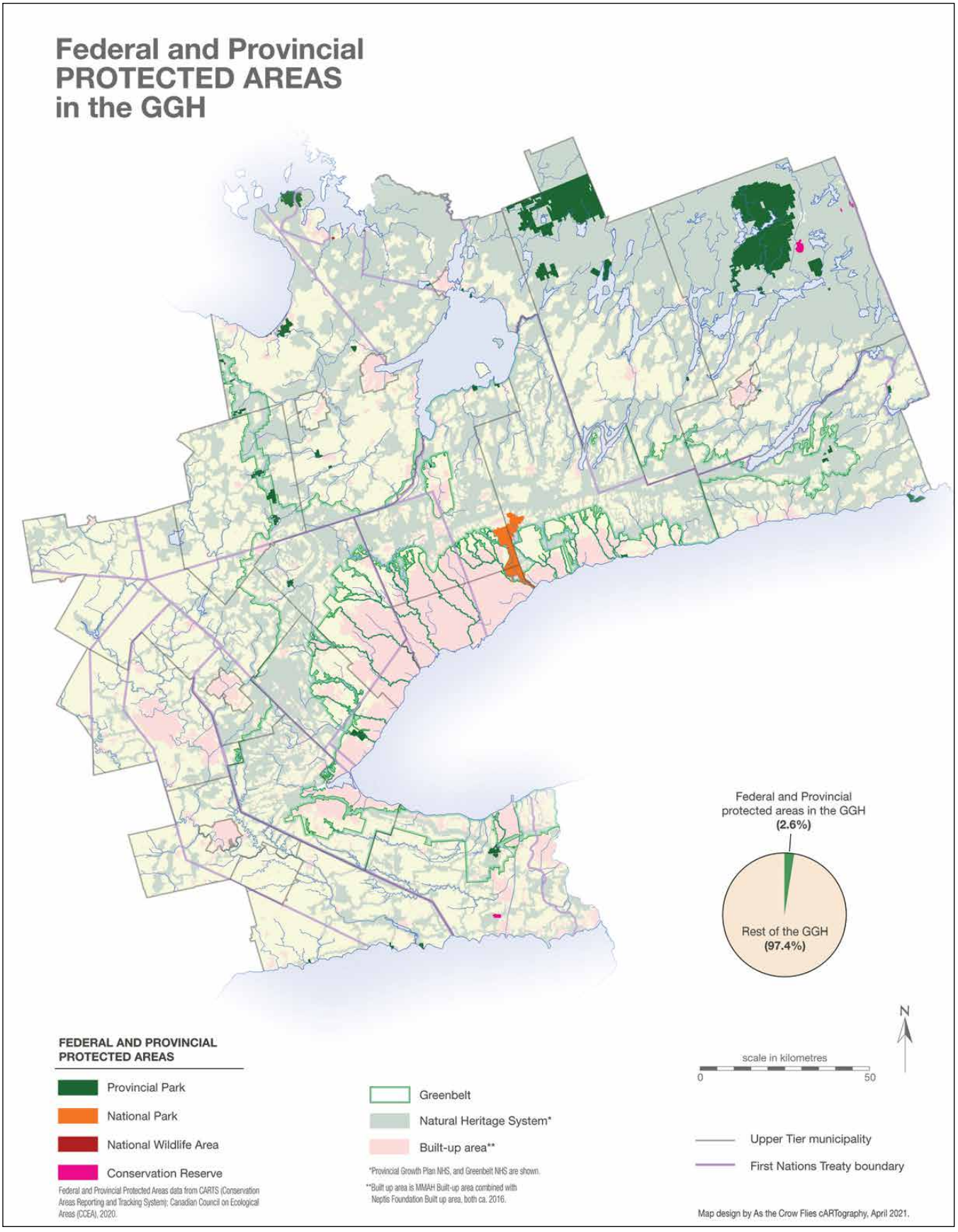
3.2 Existing protection

3.2.1 Protected Areas

Protected Areas may be established in various ways to meet the Pathway to Canada Target 1 criteria. They are assessed for reporting based on whether they meet applicable conservation standards rather than the designation mechanism (such as the specific enacting regulation) used.[65] In Ontario, Protected Areas are currently mostly federal and provincial parks and a few select land trust properties and Wildlife Areas. Some Conservation Authority and municipal properties have met these criteria in the GGH but are not yet included in Canada's Protected and Conserved Area Database.

Even though 30 per cent of the GGH is natural cover, only 94,687 hectares were formally recognized as Protected Areas through Canada Target 1 accounting at the end of 2020, or about 2.6 per cent of the GGH (see Figure 3.2). This 2.6 per cent is broken into 44 dispersed areas, with the majority of protected land in the northeast part of the GGH (see Appendix D).

Figure 3.2 *Protected Areas in the GGH*



Most of these Protected Areas fall into IUCN Category II, which means that the primary objective of these areas is to protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation.[66] One example of this type of Protected Area in the GGH is Bronte Creek Provincial Park in Oakville. A few IUCN Category Ia Protected Areas, or "Strict Nature Reserves," exist in the GGH where human visits, use, and impacts are strictly controlled to protect biodiversity, such as Nottawasaga Lookout Provincial Park (Strict Nature Reserve class).

IUCN protection categories

Ia Strict Nature Reserve: Category **Ia** are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

Ib Wilderness Area: Category **Ib** protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

II National Park: Category **II** protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

III Natural Monument or Feature: Category **III** protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small and often have high visitor value.

IV Habitat/Species Management Area: Category **IV** protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

V Protected Landscape/Seascape: A protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural and scenic value, and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

VI Protected area with sustainable use of natural resources: Category **VI** protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.[67]

Rouge National Urban Park, a Protected Area that connects the Greenbelt to the shores of Lake Ontario, is the only example of a Protected Area in the GGH that falls under IUCN category V.[68]

Many municipalities and Conservation Authorities in Ontario are assessing properties to determine whether they meet the criteria for protected and other conserved areas. The City of London's Environmentally Significant Areas have been assessed as Protected Areas and their management policies may serve as an example for other municipal lands.

In 2019, the City of London became the first Ontario municipality to have municipal lands count towards Canada's protected areas target, known as Canada Target 1. A leader in natural heritage protection, London completed an assessment of 11 Environmentally Significant Areas (ESAs) totalling 735 hectares, all of which qualified.[69] The City regarded the assessment as a way of recognizing London's strong environmental policies and confirming that their ESAs meet the national protected areas standards.

London designates ESAs under London Plan policies in recognition of the importance of their natural heritage features and functions. The City has identified 21 ESAs on the Natural Heritage map in the London Plan on both public and private property. The City continues to acquire privately owned ESA lands as opportunities arise (e.g., through parkland dedication as part of the development process, or through strategic acquisition on a willing-seller basis). Although some ESAs overlap with private lands, the 11 ESAs assessed are all publicly owned and managed by Upper Thames River Conservation Authority through a contract funded by London.

The ESAs are managed according to a Conservation Master Plan or Ecological Restoration Plan or both, informed by a biological inventory, regular monitoring, and available community science data (gathered through apps such as eBird or iNaturalist[70]). The plans and policies provide guidance on trails, ecological restoration, invasive species control, protection of Species at Risk and Significant Wildlife Habitat, and enforcement of rules and municipal by-laws. Many of the ESAs also have provincial designations (e.g., Provincially Significant Wetlands), which add another layer of policy protection.

Photo: David Watkins

The Province of Ontario recently set up a Protected Areas Working Group made up of experts from the private sector, as well as representatives from non-governmental organizations and Indigenous Communities.[71] This working group is currently assessing opportunities and barriers to increasing protected and conserved natural areas in Ontario.

Particularly in southern Ontario, the quality of protected areas is a critical consideration. According to Canada's Conservation Vision:

> *quantity refers to how much area is protected, the quality aspects include (a) connectivity, that is, completing interconnected networks of protected areas and OECMs that will be resilient to climate change; (b) representation, that is, having adequate examples of all ecosystem types in the network, including freshwater aquatic and riparian areas; (c) ensuring areas of particular importance for biodiversity and ecosystem services are conserved, (d) are effectively and equitably managed, and (e) are integrated into the broader landscape and seascape.*[72]

In addition to Protected Areas, near-urban nature in the GGH is protected to varying degrees through other means:

- Federal policy applies on federal lands such as Rouge National Urban Park and surface waters related to fisheries, navigation, federal lands, and international relations.
- Provincial policies provide varying protections for private and public lands through enabling Acts (the Planning Act, the Public Lands Act) and by permitting municipalities to enact local policies through the Municipal Act, the City of Toronto Act, and Provincial Land Use Plans.
- Municipalities have policies (including bylaws) to protect ecological functions and values on municipal lands and private lands, such as policies for natural heritage systems, park strategies, and climate change strategies.
- Conservation Authorities protect and regulate lands, including river or stream valleys and hazard lands.
- Land trusts are community-based, non-profit organizations that protect natural, agricultural, and cultural landscapes for future generations through easements and other tools (see text box).
- Landowners may undertake voluntary actions to protect and steward their lands
- Certain lands are protected by Indigenous stewardship.

Land Trusts in the GGH

Local and provincial land trusts conserve lands primarily through direct ownership or conservation agreements. The following land trusts affiliated with the Ontario Land Trust Alliance conserve lands within and beyond the borders of the GGH (areas represent total area currently conserved through all mechanisms):

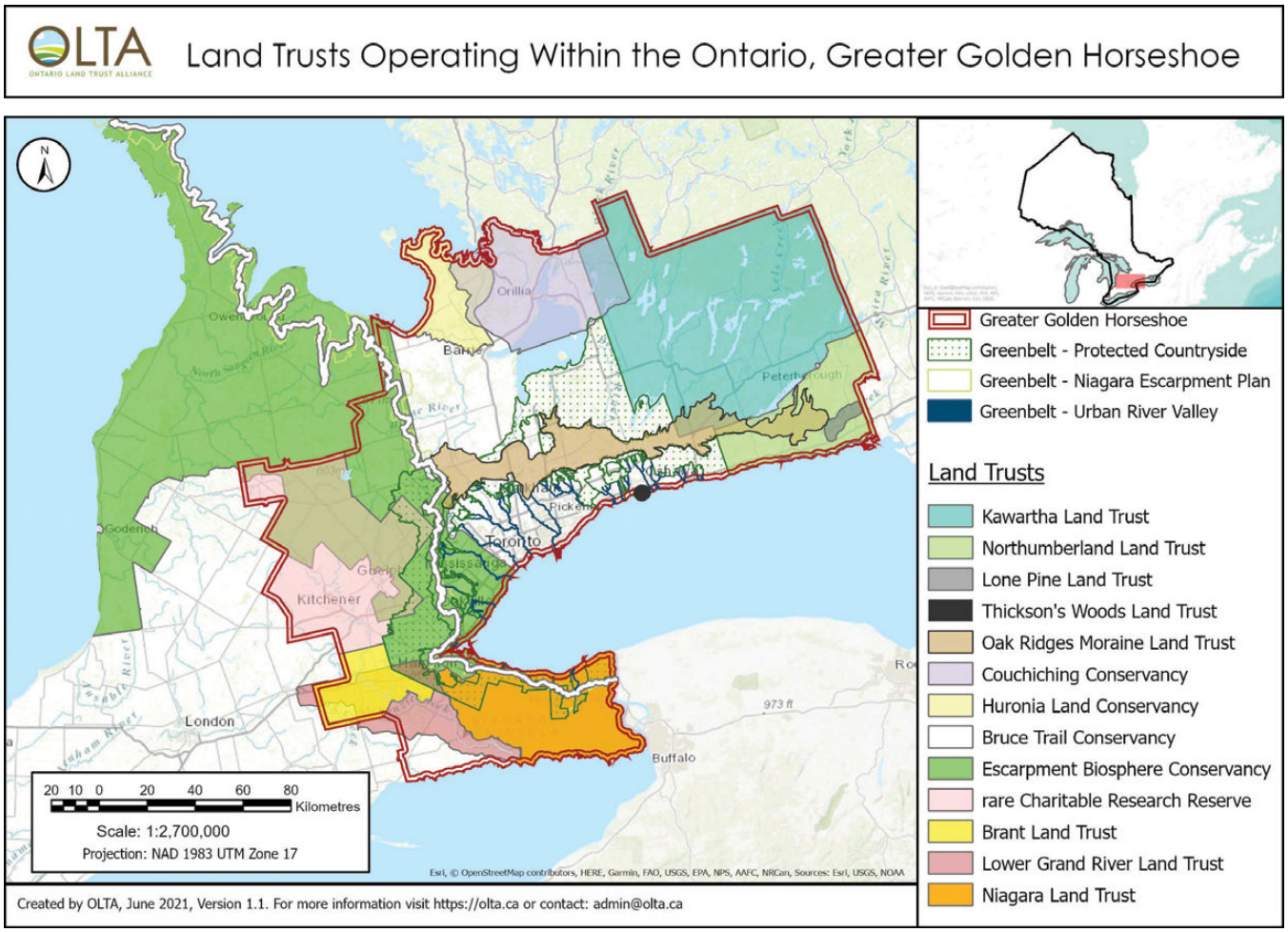
- Couchiching Conservancy (9,346 acres)
- Escarpment Biosphere Conservancy (14,475 acres)
- Kawartha Land Trust (6,944 acres)
- Oak Ridges Moraine Land Trust (3,585 acres)
- Northumberland Land Trust (481 acres)
- Lone Pine Land Trust (674 acres)
- Thickson's Woods Land Trust (25 acres)
- Huronia Land Conservancy (43 acres)
- Bruce Trail Conservancy (16,624 acres)
- rare Charitable Research Reserve (902 acres)
- Brant Land Trust (N/A)
- Lower Grand River Land Trust (1595 acres)
- Niagara Land Trust (58 acres)

Province-wide land trusts that cover the region include:

- Ontario Farmland Trust
- Ontario Nature
- Nature Conservancy of Canada – Ontario Region

Indigenous land trusts, such as the Walpole Island Land Trust, near Sarnia, are relatively new in Ontario, but are playing increasing roles in private land and cultural conservation. (See Figure 3.3.)

Figure 3.3 *Land trusts in Ontario*



3.2.2 Ecological connectivity

Ecological connectivity is the "unimpeded movement of species and the flow of natural processes that sustain life on Earth."[73] Protected areas alone are not sufficient for conserving biodiversity.[74] This recognition has implications beyond the conservation of individual species and may be especially true in highly fragmented near-urban regions.

The connectivity of natural areas will become increasingly important as the climate continues to change. The Greater Golden Horseshoe (GGH) is already an important path for species migration.[75] This region may also be an important route for bobcat range expansion north of the Great Lakes, and possibly that of other species.[76]

89%

of conservation organizations and experts ranked protection of biodiversity hotspots and wildlife corridors as a top priority for the Near-Urban Nature Network in our surveys.

The importance of ecological connectivity has been recognized in many conservation commitments, plans and strategies in Canada, Ontario and the GGH, including:

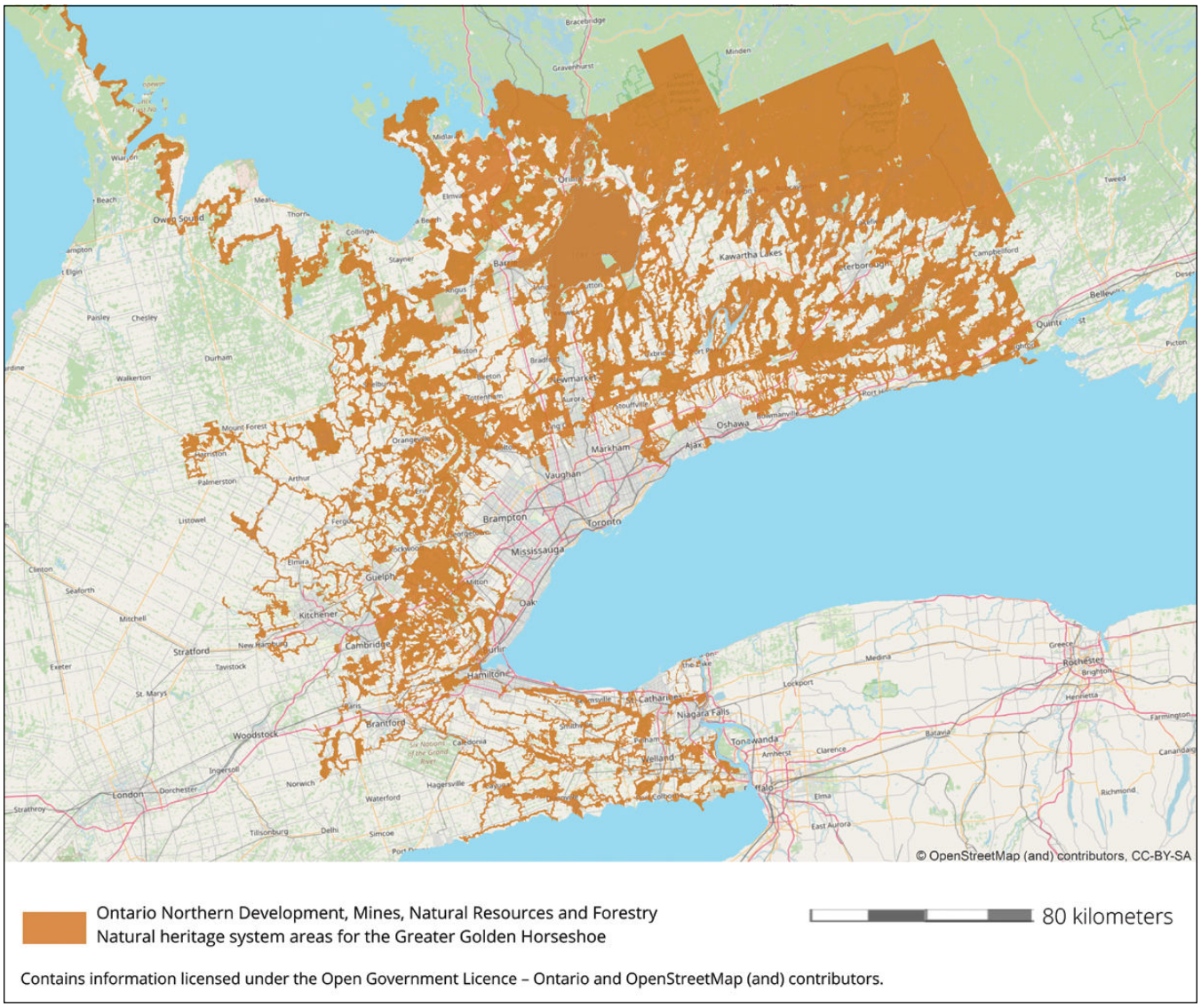
- United Nations' Convention on Biological Diversity Aichi Target 11: "By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and **well-connected** systems."
- Canada's Biodiversity Target 1: "By 2020, at least 17 per cent of terrestrial areas and inland water, and 10 per cent of coastal and marine areas, are conserved through **networks** of protected areas and other effective area-based conservation measures."
- Ontario's Biodiversity Strategy Target 13: "By 2020, at least 17 per cent of terrestrial and aquatic systems are conserved through **well connected networks** of protected areas and other effective area-based conservation measures."
- Ontario's Provincial Policy Statement: "the diversity and **connectivity** of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing **linkages** between and among natural heritage features and areas, surface water features and ground water features" and "natural heritage systems shall be identified in Ecoregions 6E and 7E1, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas." The GGH falls within these ecoregions and therefore municipalities are required to identify natural heritage systems here.
- Ontario's four Provincial Land Use Plans have mapped natural heritage systems and policies that address the need for connectivity between core areas through natural heritage **linkages** (described in Section 3.2.3). The provincially mapped regional natural heritage system developed in support of these plans is shown in Figure 3.4.
- In the GGH, municipalities and some Conservation Authorities have identified their own natural heritage systems within their jurisdictions that cross private and public lands. In some cases, municipalities default to the provincially defined systems in the land use plans described above. These systems are based on cores, **corridors**, and buffers but are developed, interpreted, and enforced differently in different jurisdictions.

Despite the recognition of the importance of connectivity, protected areas and high-quality habitat in the GGH are often interrupted by roads and buildings, aggregate extraction areas, intensively tilled farmlands, and degraded natural areas.

To some extent, land use policies like those in the Greenbelt Plan may be helping to reduce the rate of this fragmentation, as the observed increase in fragmentation from 2011 to 2017 was lower inside the Greenbelt than in the rest of the GGH.[77]

At the regional level, the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry led the establishment of core- and corridor- (or linkage-) based Natural Heritage Systems for land use plans, including the Growth Plan for Greater Golden Horseshoe (see Figure 3.4). At local levels, connectivity is also incorporated into municipal and Conservation Authority policies and practices. Core and linkage areas are designated not only because of ecological and hydrological value, but also by technological, economic, political, and social considerations.

Figure 3.4 *Natural Heritage System Area in the GGH*



Despite these protections, permitted uses in linkage areas continue to threaten landscape connectivity. New research in the GGH and innovative approaches for supporting connectivity are described in Section 5 of this report. These efforts should be guided by local expertise and experience as well as the IUCN's new guidelines for conserving connectivity through ecological networks and corridors.

3.2.3 Policies and plans

The GGH has a unique regional land use planning framework for where and how the region will grow. This framework consists of four land use plans that together are intended to protect vital agricultural lands, curb sprawl, support compact growth, and protect critical environmental features from urban development. These plans also include climate change considerations and cultural heritage resource policies that contribute to climate resilience and a sense of place and attract tourism and investment (for example, the Niagara Escarpment Plan includes protection for scenic views). implications beyond the conservation of individual species and may be especially true in highly fragmented near-urban regions.

The plans must be reviewed at least every 10 years, although the Province may make changes more frequently, as in the 2020 updates to the 2017 plans. Land use plans work in conjunction with other regional plans like *The Big Move – Transforming Transportation in the Greater Toronto and Hamilton Area*.

Provincial Land Use Plans

The **Greenbelt Plan** covers three geographies. The **Oak Ridges Moraine** and **Niagara Escarpment** each have their own specific Land Use Plans and additional **Protected Countryside** and urban river valley policies are in the Greenbelt Plan. Together the Greenbelt Plan protects about 850,000 hectares of land and 21 urban river valleys that connect the Greenbelt to Lake Ontario and Lake Simcoe. The Greenbelt Plan also encourages ecological and trail connectivity across the region, including agricultural lands.

The **Growth Plan for the Greater Golden Horseshoe** contains density and intensification targets to support a shift towards more compact development patterns. This Plan also requires identification of water resources, agricultural areas, and natural heritage systems with similar policies for a consistent approach across the region. This Plan recognizes watershed planning as the appropriate scale for protecting the quality and quantity of water and requires municipalities to undertake watershed planning (usually led by or with the support of Conservation Authorities).

These plans inform growth decisions and conservation planning across municipal and watershed boundaries for strategic and informed growth decisions.

These provincial land use plans have been acknowledged as good examples of science-based land use planning. The science of conservation biology had considerable influence on the land-use planning process for the Oak Ridges Moraine; this process has been called "precedent setting in Canada, and possibly internationally...this is the first time long, wide conservation corridors on private lands were regulated through land-use-planning legislation and led to restrictions on urban development and aggregate resource extraction."[78]

The Greenbelt and Growth Plan protect agricultural, natural heritage, and water resource systems. In some areas, these systems overlap. Updated systems identified in the updated plans are being integrated into municipal Official Plans. Municipalities can provide leadership and innovation in developing a culture of conservation – with some exceptions, notably linear infrastructure and mineral aggregate resource policies, which are directed by the Province.

Municipal Official Plans must also follow guidelines in the Provincial Planning Statement (PPS) issued by the Ministry of Municipal Affairs and Housing. The PPS requires all municipalities in the GGH to have natural heritage system policies in their Official Plans and to include maps of their natural and hydrologic features. Some municipalities, however, use provincial maps and policies from the provincial land use plans. In many cases, municipalities have two layers of natural heritage systems policies – those of the regional municipality and those of the local municipalities within each region, which may conform to the regional municipal system or may add to it.

At the watershed scale, Conservation Authorities work with municipalities in developing, implementing, and monitoring natural heritage and water resource system plans and policies. Some Conservation Authorities have their own mapped natural heritage systems, refined through the watershed planning process. Because Conservation Authority efforts often overlap multiple municipal boundaries, a natural area may fall within provincial, upper- and lower-tier municipal, and Conservation Authority–regulated areas (or mapped natural heritage systems). Moreover, First Nations Treaty rights apply across the GGH. These are not "land use policies," but obligations that can provide protection, at the discretion of First Nations Communities.

3.3 Threats and challenges

Reports on biodiversity in the region contain a mix of positive and negative stories. Some positives include:

- the development of natural heritage systems
- Ontario's phase-out of coal-fired plants, which has significantly reduced residents' per-capita ecological footprint (and improved air and water and therefore habitat quality)
- new legislation for invasive species[79]

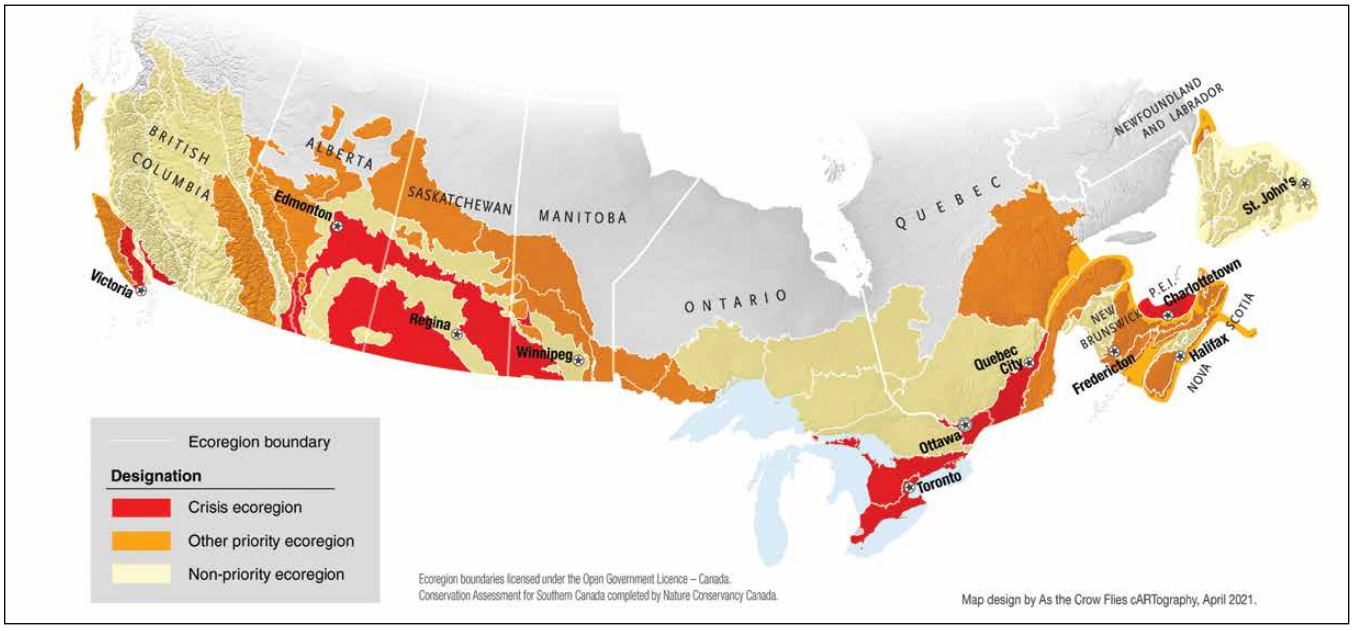
Still, many negative trends continue: habitat loss, fragmentation, declines in the populations of species at risk, and the rise of invasive species.

3.3.1 Crisis ecoregions and climate change

The Nature Conservancy of Canada has identified biodiversity priority areas for urgent action across Southern Canada. The GGH is situated within two of these priority areas.[80] The Lake Erie Lowland (Carolinian Life Zone) and Manitoulin-Lake Simcoe ecoregions, both of which have been classified as "crisis ecoregions," combine high diversity of species and ecosystems with a high threat level compared with other ecoregions in southern Canada. They are also among the least protected areas (see Figure 3.5). These ecoregions are distinctly categorized because of the different ecological communities and species found in each, but they face similar challenges, particularly in the GGH, where the two meet. Human modification of the environment includes land use changes and the redistribution of species.

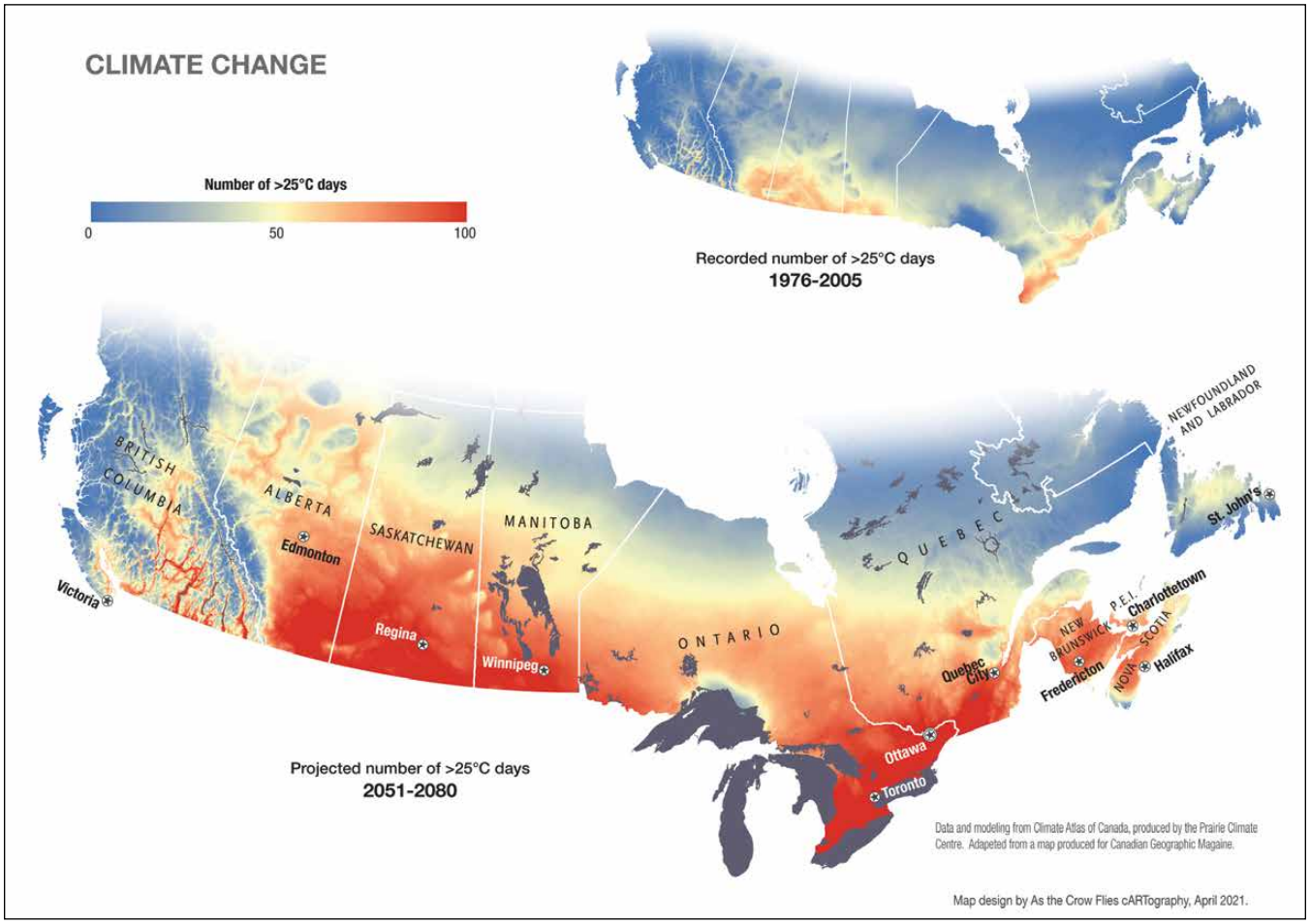
Crisis ecoregions across Canada coincide with heavily settled landscapes which have the "longest history of colonization, agricultural, urban and industrial land uses, and where most Canadians live."[81]

Figure 3.5 *Conservation assessment for southern Canada by the Nature Conservancy of Canada shows the GGH crosses two "crisis ecoregions."*



The GGH also needs to address interrelated environmental and social issues in the context of climate change, including higher average temperatures (see Figure 3.6).

Figure 3.6 *Projected number of days over 25 degrees Celsius 2051–80, Southern Canada*



Continued habitat loss and fragmentation, together with climate change impacts, can cause an ecological threshold to be passed, at which point there is an abrupt and persistent shift to a new state, called a "regime shift." This shift can alter the functions of entire ecosystems, affecting biodiversity, climate resilience, and the benefits nature provides to people.

For example, climate change could lead to higher water levels, more invasive species, and harmful algal blooms, which together could cause a regime shift in Lake Ontario's coastal wetlands.[82] Species that rely on these habitats may adapt to the new conditions, attempt to migrate away from that area, or face extirpation. In moving away from areas that are no longer suitable, species may move into new areas as climate change creates new habitat more suitable to them. Changes in species ranges linked to climate change impacts have already been observed in Canada.[83]

In the Ajax Warbler Swamp, a treed swamp that is part of the Carruthers Creek Wetland Complex, overflow from a stormwater pond in a new nearby development and a beaver dam contributed to flooding that killed all the trees in the swamp, so that it transitioned to a cattail marsh.[84]

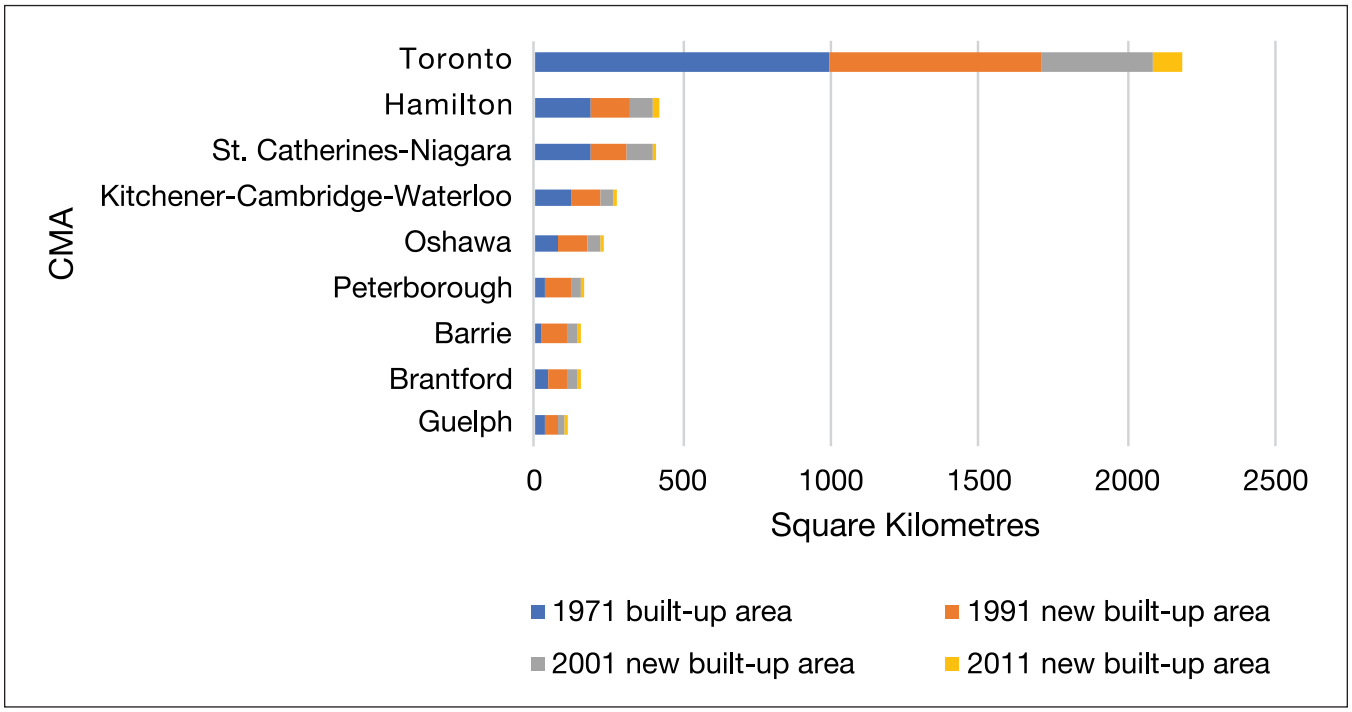
The Government of Ontario is undertaking its first-ever provincial climate change impact assessment, which will evaluate climate change impacts at a provincial scale, as well as focus analysis at a regional scale that takes into account the unique geographies, economies, municipalities, and communities of those regions. The assessment will also examine the impacts on a number of key themes, including infrastructure, food and agriculture, people and communities, natural resources, ecosystems and the environment, and business and the economy.[85]

3.3.2 Urban expansion and fragmentation

According to 82 per cent of the land stewards we consulted, urban expansion is a top threat to biodiversity. While cities in the region continue to grow, land use and community planning practices need to support the protection and function of nature. A lack of political will to act was identified by 71 per cent of land stewards as a threat to near-urban nature. These views were corroborated by interviews with key informants, who placed additional emphasis on the potential of a Near-Urban Nature Network to help address these threats.

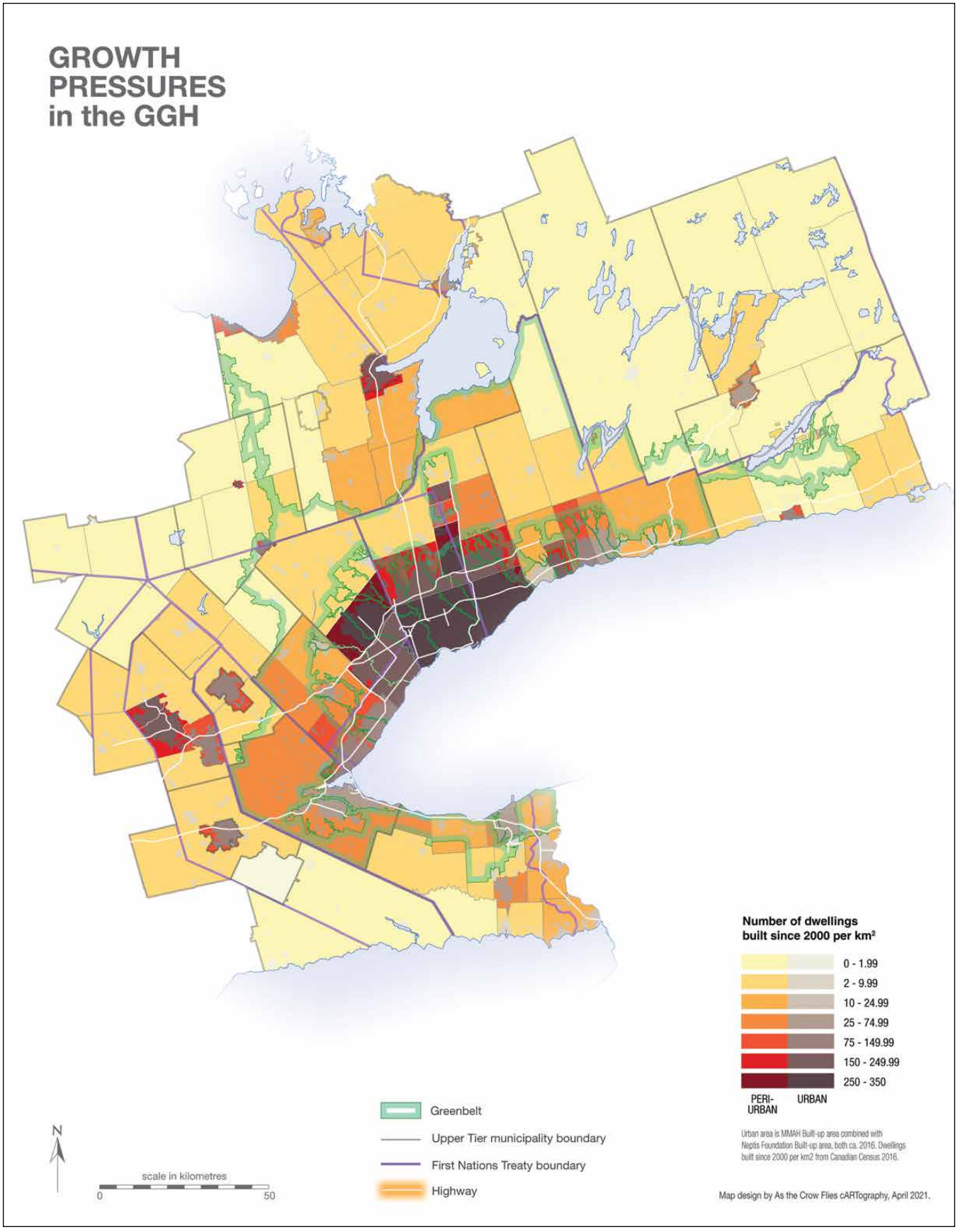
As prime agricultural and natural areas are converted to residential and other uses, the footprint of cities is growing rapidly. The areas of the Census Metropolitan Areas (CMAs) that represent much of this region have all more than doubled since 1971 (Figure 3.7). The largest built-up area expansion across Canada, the Toronto CMA, has grown by 471 km^2.

Figure 3.7 *Built-Up Area by Census Metropolitan Area (CMA) in the GGH 1971, 1991, 2001, and 2011. Source: Statistics Canada, 2016*



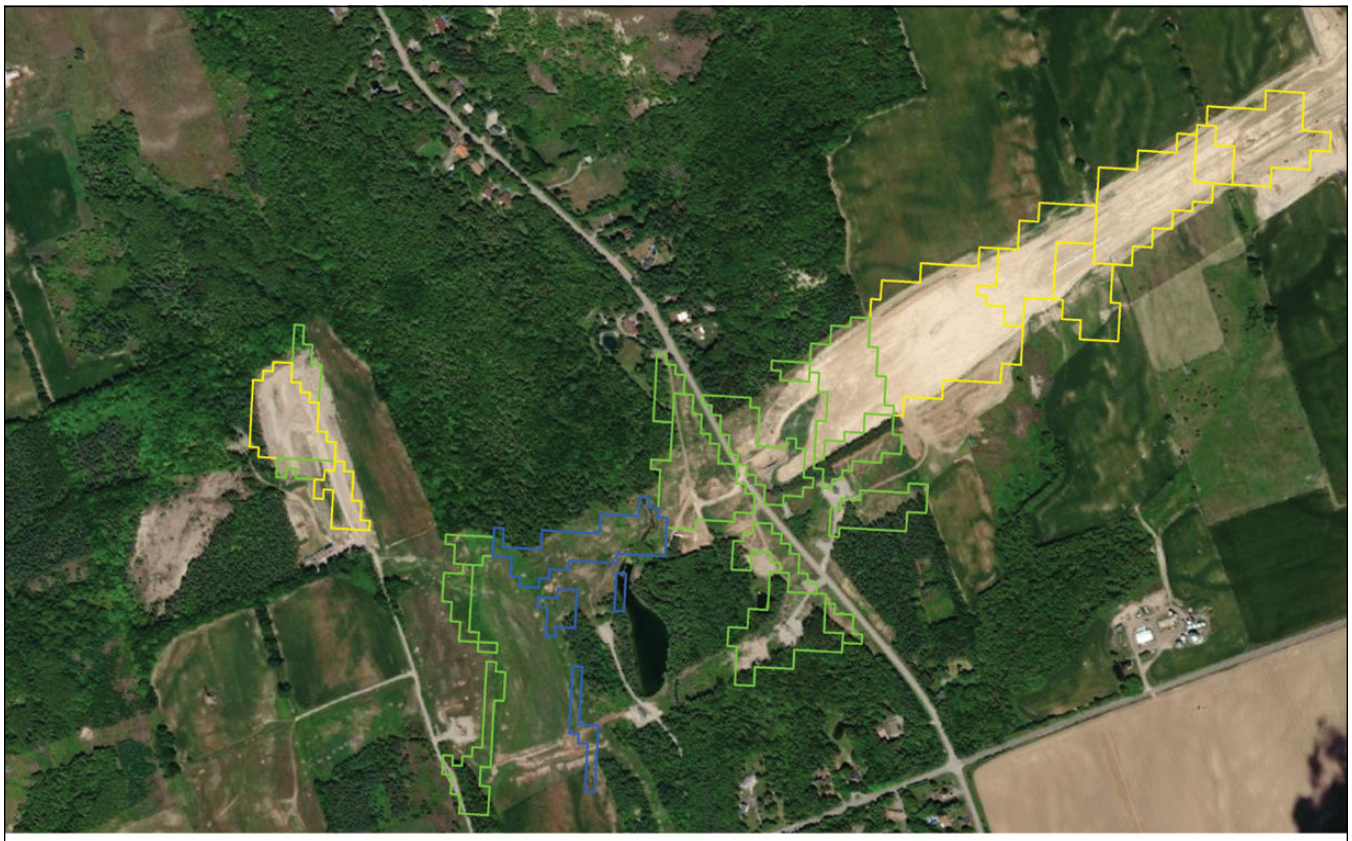
Residential development is occurring across the GGH, particularly in the urban centres in the Golden Horseshoe between the Greenbelt and Lake Ontario (Figure 3.8). Population density follows similar patterns to dwellings built since 2000.

Figure 3.8 *Dwellings built in urban and peri-urban areas since 2000, by Census Metropolitan Areas in the GGH*



Even within the Greenbelt, the natural system has become more fragmented. The most well-connected portion of the Greenbelt, the Oak Ridges Moraine, saw the greatest increase in fragmentation, likely related to permitted uses within linkage areas of the Oak Ridges Moraine such as aggregate extraction and road construction[86] (see Figure 3.9).

Figure 3.9 *Example of fragmentation due to the construction of Highway 407 through the Greenbelt, interrupting connection from the Oak Ridges Moraine to the urban river valleys*



Despite the many known benefits of forests, we continue to lose them from the landscape. More than 5,000 hectares of woodland in the GGH have been lost since 2000 (about 1 per cent of the total woodland). Conversion to suburban land use is the number-one cause for this loss, according to Ministry of Northern Development, Mines, Natural Resources and Forestry data. The figure is an underestimate, because it does not account for the losses of hedgerows, plantations, or areas of young successional forests that are not as well monitored or well protected.

The expansion of built-up areas has many negative implications for biodiversity:

- Direct loss of habitat, for example, when a field is stripped of vegetation and top soil before construction of a new subdivision, directly altering terrestrial ecosystems including soils.
- Impacts on aquatic systems downstream through the compacting of soils and paving of surfaces, changing the hydrology of the site.
- Increasing or intensifying the urban heat island effect by decreasing the amount of vegetation while increasing the extent of impervious surfaces and the number and type of heat sources (such as air conditioners or cars), leading to heat stress on plants and animals and localized drought.
- Increased pollution sources, such as road salt on new roads and parking lots
- New points of entry for invasive species through residential yards, pets, and illegal dumping of garden materials into nearby natural areas
- Habitat fragmentation from roads, raised culverts, and other infrastructure elements that impede wildlife movement and ecological function[87]; wildlife may also be killed on roads and railways.

Estimates based on Ministry of Northern Development, Mines, Natural Resources and Forestry 's land cover change data, show that over the period 2011–16:

- Overall vegetation lost (primarily to development and resource extraction) inside the Greenbelt (2,733 hectares or 0.34 per cent) was lower than outside the Greenbelt (11,807 hectares or 0.37 per cent)
- 1,330 hectares of wetland and 1,720 hectares of woodland were lost in the GGH

Historically, more than 70 per cent of wetlands have been lost in southern Ontario because of land conversion. Despite laws and policies in place to protect wetlands, the loss continues. Between 2000 and 2011 more than 6,000 hectares of wetlands were lost, mostly in the Greater Toronto and Hamilton Area. A 2018 report by Ontario Streams on the status of wetlands in the Lake Simcoe watershed revealed a loss of 773 hectares of wetland between 1999 and 2002 and between 2013 and 2016.[88] The reasons were, in order of importance: agriculture, residential development, peat extraction, canals, and highways and roads.

Recreational pressures on near-urban nature were frequently mentioned in the stakeholder engagement process, particularly during the 2020 season when the COVID-19 pandemic increased the demand for outdoor recreation. Increased population, even in dense neighbourhoods, put pressure on nearby natural systems directly (for example, through littering or camping) or indirectly through increased pollution associated with larger populations (more waste and heat generated).

Because of these pressures, many urban municipalities and watersheds in the GGH have bylaws and programming related to interactions with nature (including individual tree protection bylaws or stewardship programs to clean and maintain trails).

3.3.3 Limits to monitoring land use changes

Losses of significant ecological features like wetlands and woodlands do not tell the full story of how urban development is impacting natural systems in the GGH. Cultural meadows and other habitats cannot be easily assessed with existing data sources, so trends in these types of habitats are less well known. An assessment by the Toronto and Region Conservation Authority (TRCA) showed this habitat type was disappearing most quickly, with an estimated 4,363 hectares lost between 2002 and 2013 – approximately 2 per cent of TRCA's entire jurisdiction.[89] Although these habitats are transient, they often exist as part of agricultural landscapes.

Features such as windrows, tree plantations, and cultural meadows can provide important social, cultural, and economic benefits, but protection or restoration are rarely accounted for in planning processes, because these features are viewed as having lower ecological value.

Another problem with monitoring is the time lag between land purchase and urban development, which can take decades. In that time, landowners may prepare for development either by removing vegetation or by expanding the production of cash crops (which may involve removing windrows and tree plantations). These actions would be classified as a change from natural cover to agriculture, although the underlying process is development or resource extraction.

Much of the information used to assess and describe trends comes from remotely sensed information like SOLRIS or generalized area-based information like the Ecological Land Classification (ELC) system, which is survey-based. Deriving information about species population trends from this data is not possible.

Understanding qualitative changes over time requires long-term field monitoring. This type of monitoring is undertaken by some Conservation Authorities and municipalities in the GGH, but methods are not standard across the region, so it is impossible to determine regional trends. Several municipalities and Conservation Authorities in the GGH are starting to use the Vegetation Sampling Protocol developed by the University of Toronto's Daniels Faculty of Architecture, Landscape, and Design, but most are not.[90]

Research on the forest dynamics of the Niagara Escarpment demonstrates how plot-based monitoring – that is, long-term field locations that are regularly re-visited – can add value to understanding beyond ELC "forest type."[91] A network of plots for long-term monitoring across the GGH would help in understanding trends over time, especially as the climate continues to change. Data should be collected across a study area, regardless of ownership, to get an understanding of trends across the landscape, but data from private lands are often lacking.

Data sharing has improved in recent years, but there is still a long way to go to get data online and available to the public. Sharing information collected by municipalities and Conservation Authorities about land ownership and ecological function could advance research and understanding about regional trends. Information as basic as the amount of land in private ownership in the GGH is not publicly available. This gap impedes effective conservation planning.

3.3.4 Many plans, many policy gaps

Land use plans in the GGH, including the Greenbelt Plan and the Growth Plan for the GGH, are regional-scale and long-term visions with supporting regulation for protecting agriculture, water resources, and natural heritage systems.

However, the complexity of having multiple layers of policy and jurisdiction – including federal, provincial, upper- and lower-tier municipal governments, as well as Conservation Authority plans and policies, Treaty Rights, and property owner management decisions – makes it more difficult to identify gaps and coordinate action.

Known gaps in provincial and municipal land use policy include exemptions that permit infrastructure construction and resource extraction, leading to habitat loss and fragmentation. Even where municipalities and Conservation Authorities require compensation for these losses by restoring natural areas elsewhere, there is a lag time in the creation of those new habitats that can affect biodiversity and some habitats will take centuries to return, if at all.

Several reasons explain the ineffectiveness of current policy in preventing the loss of natural areas, including wetlands. First, about half of all wetlands in the GGH have not yet been evaluated for their significance. Evaluation prior to approving development proposals is not required. Given that the determination of "provincial significance" affects the level of wetland protection, the failure to evaluate wetlands undermines the achievement of policy objectives. Similar issues exist with the evaluation and definitions of woodlands, which exclude protection for trees outside a certain definition, including plantations and successional habitats. Cultural meadows have no protection and are not monitored, even though they are important habitats and provide social and cultural values.

In the Greenbelt and Lake Simcoe watershed, all wetlands of 0.5 hectares or more are automatically protected. A 0.5 hectare wetland may sound small but it is actually pretty substantial. In many parts of southern Ontario the majority of wetlands on the landscape are under 0.5 ha in size. Many of these small wetlands support significant ecological functions including amphibian breeding habitat, turtle habitat, and provincially, regionally or locally significant flora and fauna. They also tend to contain vegetation communities that are uncommon on the local landscape or provide intervening habitat (stepping stones) between larger wetlands. Many amphibians breed in small vernal wetlands or what are called vernal pools.

Second, losses continue because of the exceptions to policy protections for infrastructure construction and resource extraction. The infrastructure projects exempted include sewage and water systems, waste management systems, transit and transportation corridors and facilities, and oil and gas pipelines and associated facilities.

Third wetlands that are not determined to be provincially significant are not protected, even in areas where wetland loss has been extreme, such as the Niagara Peninsula and the Greater Toronto Area (more than 85 per cent loss).

Fourth, in order to achieve the long-term intent of policies that protect natural systems, and address the urgent need for climate resilience, we must protect the integrity of natural systems both within and outside the Greenbelt. Several provincially significant wetlands in the GGH are currently under threat because of the provincial government's use of Minister's Zoning Orders (MZOs) to expedite development on farmland and green spaces. In 2020, amendments to the Planning Act through Schedule 17 of Bill 197 expanded the government's power to issue MZOs. Subsequently, Schedule 6 of Bill 229, passed in December 2020, included an amendment to the *Conservation Authorities Act* compelling Conservation Authorities "to permit MZO-authorized development anywhere outside of the Greenbelt Area, even though this would be contrary to the applicable rules."[92] These changes were enacted without consultation with Indigenous Communities. Bill 257, passed in April 2021, made additional changes to the *Planning Act* to allow MZOs to override key provisions of the act. When a MZO is used to permit development, it will no longer have to be consistent with Ontario's fundamental planning principles set out in the Provincial Policy Statement (PPS). Except within the Greenbelt, lands currently protected under the PPS will become vulnerable too, as the law will allow MZOs to be issued to fast-track development projects that could destroy protected farmland, wetlands, and natural features.

Finally, habitat on private land has varying degrees of protection across the GGH. Conversion from natural feature to other forms of land use is limited through land use planning polices and processes, but long-term management planning and support for private lands is largely based on voluntary programs offered by Conservation Authorities, municipalities, and NGOs such as land trusts and Ontario Soil and Crop Improvement Association (OSCIA). These initiatives are shared efforts with groups and organizations that tend to focus management planning only on the natural areas they own or are responsible for managing. Watershed and natural asset management are two opportunities for more systems-based management planning for natural areas on private lands. Even on municipal and Conservation Authority–owned lands, the level of strategic and long-term management planning capacity varies greatly across the GGH. Credit Valley Conservation Authority's Sustainable Forest Management Plan is a good example of long-term management, including financial, planning. Voluntary programs like Forest Stewardship Council certification exist to promote this kind of long-term sustainability planning. These programs are discussed further in Section 7.

3.4 Protecting and restoring a Near-Urban Nature Network

The region retains more than 30 per cent natural cover, largely in near-urban landscapes, in private and public woodlands, on agricultural lands, along major urban river valleys, and in municipal parks. Despite the challenges, tremendous opportunities remain for advancing protected and conserved areas that will help Canada meet federal biodiversity targets to conserve 25 per cent of its lands, freshwater, and oceans by 2025, working toward 30 per cent by 2030.

Protecting what is on the land, starting with the areas providing greatest ecological, cultural, and social benefit and unceded (Crown) lands, should be a priority, along with restoring and adding new protected areas. Since most of the lands in the GGH are in private ownership and municipal governments and Conservation Authorities have few management planning requirements, voluntary stewardship programs will be critical to the success of the Near-Urban Nature Network.

Opportunities to maintain ecological connectivity and increase the level of protection across the GGH are presented along with immediate opportunities to advance restoration through the Federal Two Billion Tree commitment. In general, the fundamental process of developing a Near-Urban Nature Network involves the following actions:

- **Protect and connect a network** of areas with high ecological, cultural, and social value, including ecological corridors (see sections 4 and 5).
- **Restore** lands based on local objectives, including improving connectivity, enhancing community climate resilience, ensuring more equitable access to green space, and supporting the supply and distribution of native plants (see section 6).
- **Voluntarily steward** lands with the support and inclusion of the Indigenous Peoples, engaging land stewards and institutional management (see section 7).

4. Opportunities to expand protection to new areas

Many areas in Ontario are already recognized for their important ecological values. The level of protection could be strengthened so that they count towards Canada Target 1. These include:

- Provincial Wildlife Areas
- Areas of Natural and Scientific Interest
- Provincially Significant Wetlands
- County and regional forests
- Conservation Authority and municipal lands

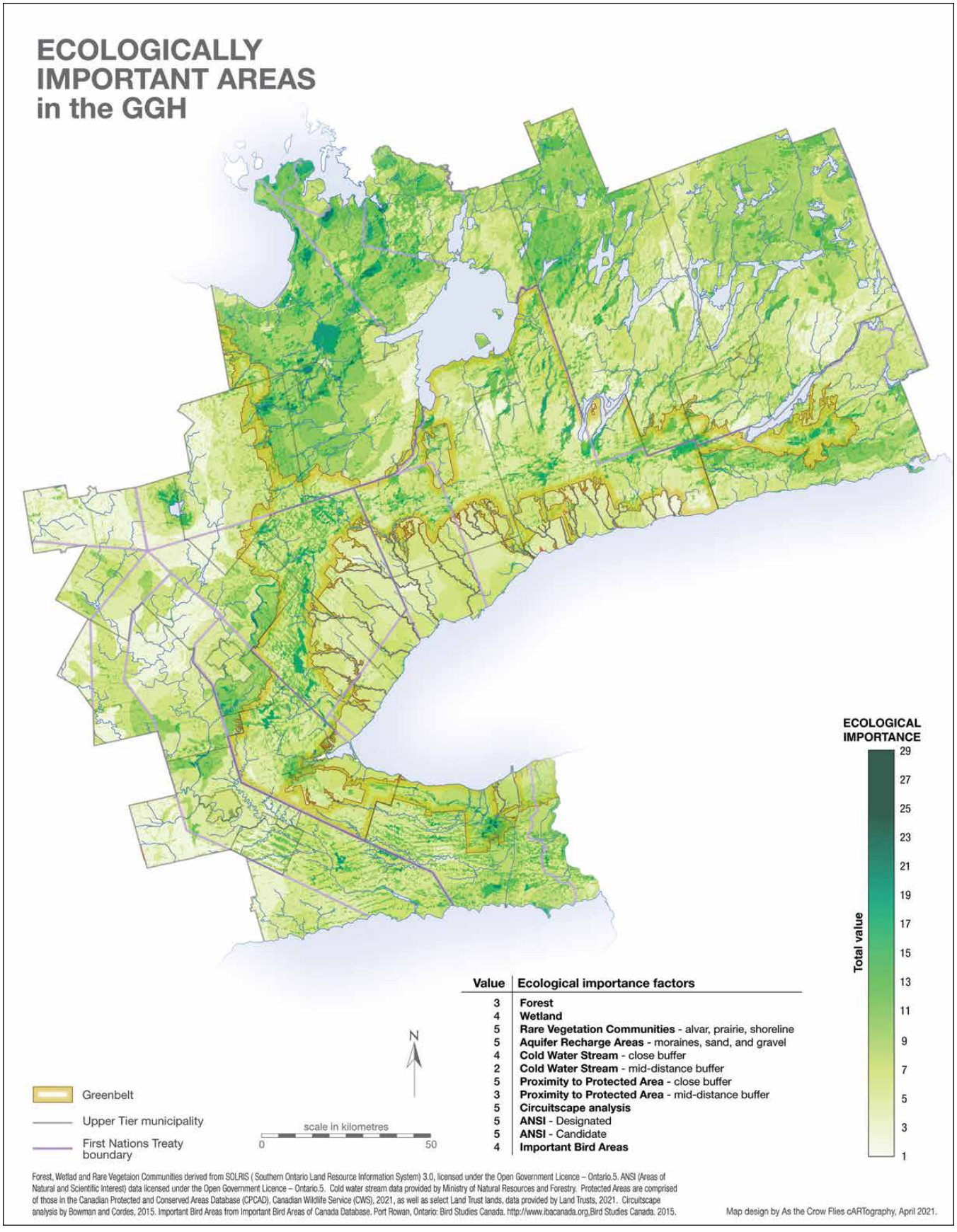
It is also important to identify and prioritize areas for protection based on ecological values, opportunities for new protection, and restoration near existing protected areas, such as:

- Water recharge areas
- Important bird areas
- Rare plant communities
- Forest and wetlands (beyond PSWs)
- Coldwater streams
- Areas in proximity to existing protected areas
- Sites and areas of cultural significance to Indigenous Peoples
  (note this information was not included in this mapping exercise. Biocultural and Traditional Knowledge mapping should be considered with the leadership and permission of interested Communities)

Some of these areas are partially protected such as significant groundwater recharge areas, which are partially protected under the Clean Water Act, or natural features protected under natural heritage plans, although the relative strength of these policies varies across the region. Additionally, some areas that influence existing protected areas, such as the lands that surround them, may fall outside protection by any type of policy.

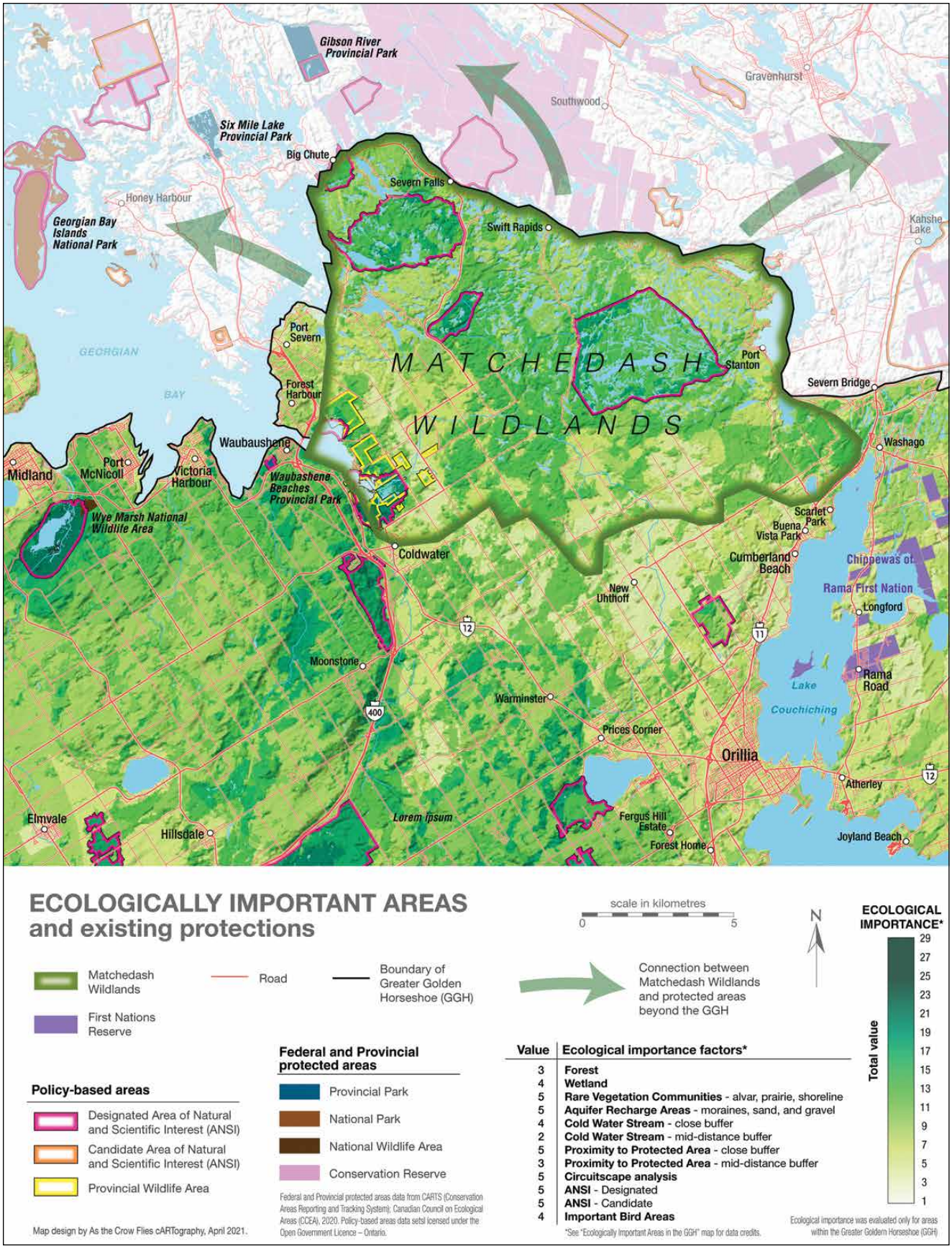
Ecological values were mapped and weighted by the SONC partners in relation to their relative importance in targeting new or strengthened ecological protections. Figure 4.1 shows ecologically important areas in the GGH. See Appendix B for details on how this map was created.

Figure 4.1 *Ecologically important areas in the Greater Golden Horseshoe*



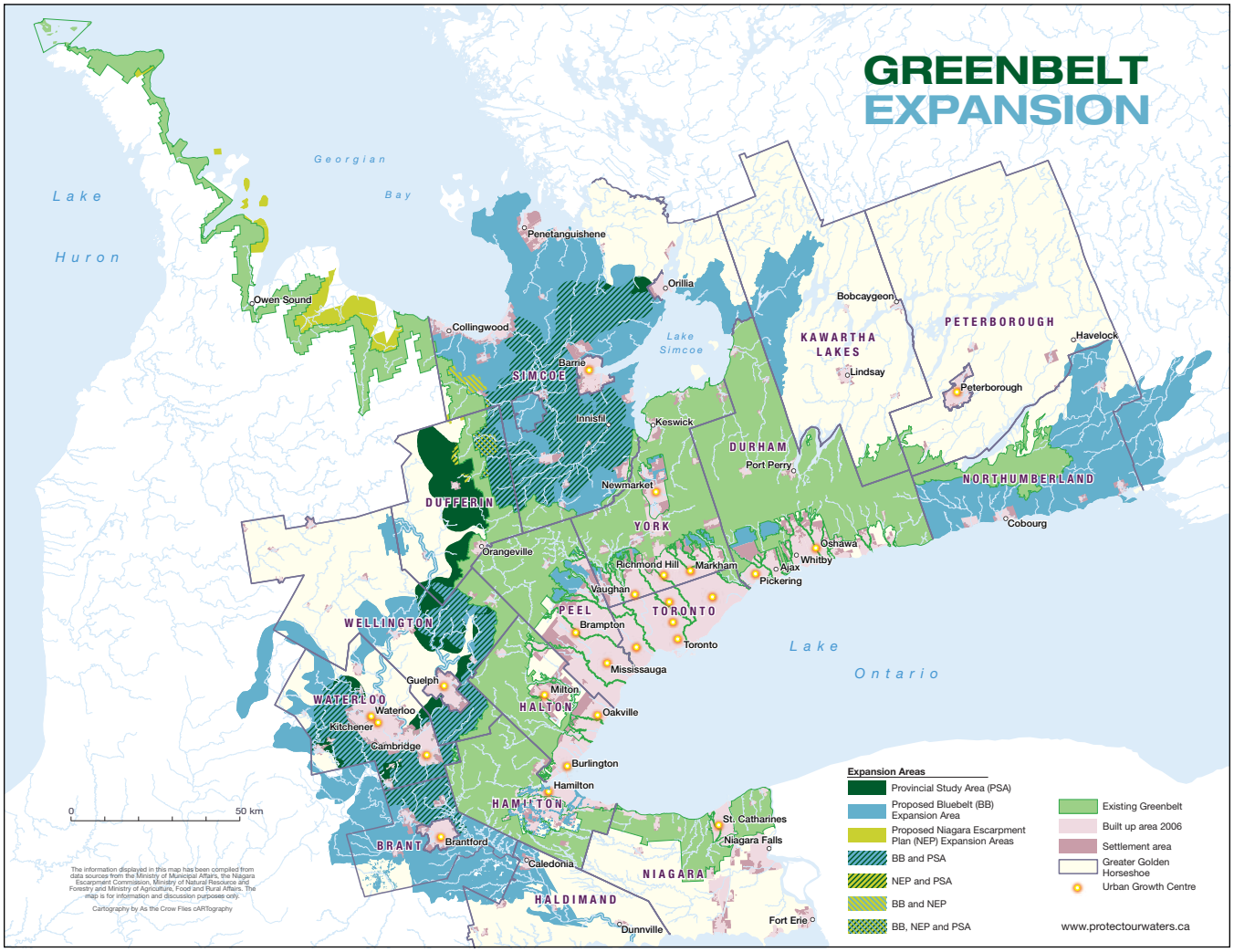
Ecological corridors connect protected areas. In some areas in the GGH that have high ecological values, protection would maintain connectivity between existing protected areas. The Matchedash Wildlands in the far north of the GGH is an example. This important wildlife corridor stretches from just east of the southern tip of Georgian Bay to Swift Rapids, north of Orillia. Expanding existing adjacent protected areas could protect lands that have high ecological values and are also important to connectivity (see Figure 4.2). This is a fairly large-scale example, but as protected areas increase in the region, these opportunities to connect lands will also increase at all scales. The provincial and federal governments should examine their properties near existing protected areas for opportunities to expand protection.

Figure 4.2 *Ecologically Important Area: Matchedash Wildlands*



The Province of Ontario is currently in consultation about the expansion of the Greenbelt Plan's protection to additional areas, with a particular focus on groundwater resources. In provincial consultations in 2016, a coalition of 120 groups outlined a proposed expansion they called the "Bluebelt," which would protect vulnerable water systems throughout the Greater Golden Horseshoe. These areas are shown in Figure 4.3. Note that these areas reflect the recommendations of a former coalition and do not necessarily reflect the recommendations of the SONC partners.

Figure 4.3 *Proposed Greenbelt Expansion, the "Bluebelt"*

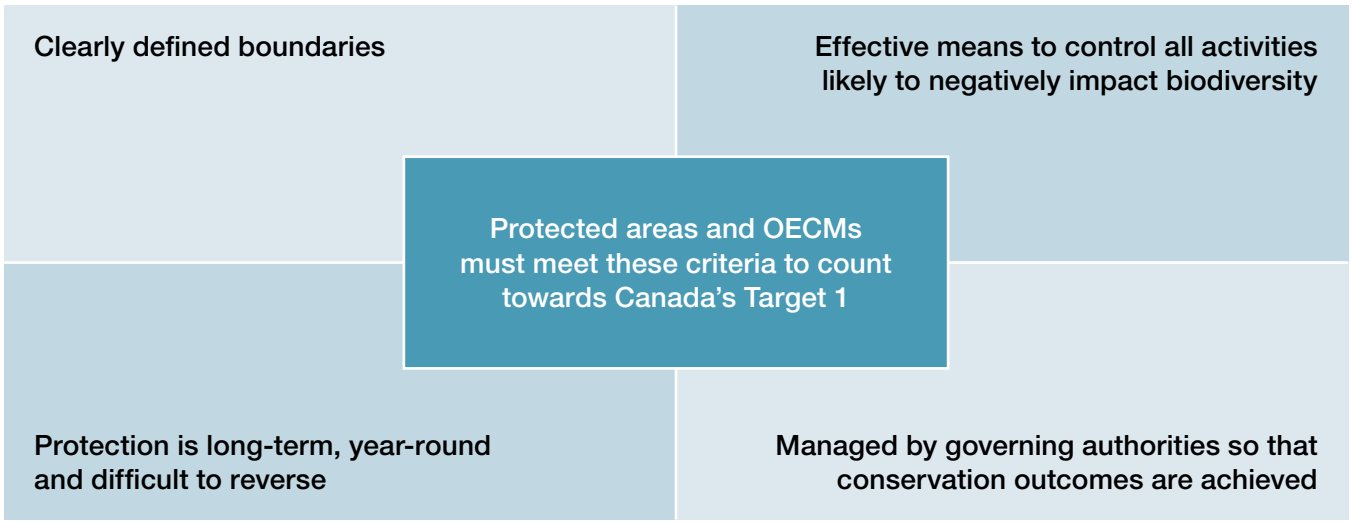


Opportunities in the GGH to create new Protected Areas include expanding existing Protected Areas, for example Rouge National Urban Park, by assessing and securing nearby federally owned or other lands. Innovative partnership arrangements with landowners also holds some potential to increase the size of protected and conserved core areas. Indigenous Communities, Conservation Authorities, land trusts, and institutions can also help increase protected and conserved lands and contribute toward Canada's Target 1.

Certain less-familiar types of conservation measures can be counted and contribute towards achieving Canada's Target of conserving 25 per cent of lands, freshwater, and oceans by 2025, including those that meet the criteria to qualify as "Other Effective Area-based Conservation Measures" (OECMs). This newly coined term applies to sites that are not managed first and foremost for conservation, but that "still contribute to the effective and sustained conservation of biodiversity."[93]

The key difference between Protected Areas and OECMs is that biodiversity conservation must be the primary objective of a Protected Area, whereas OECMs deliver conservation of biodiversity but may have other primary objectives. Figure 4.4 identifies the criteria for Protected Areas and OECMs as part of Canada's commitment to meeting Target 1.

Figure 4.4 *Criteria for establishing Protected Areas and OECMs*



The National Advisory Panel on Canada's Target 1, appointed by the federal government, has recommended that OECMs play a greater role in future conservation efforts: "We recommend that Aichi Target 11–Canada Target 1 be achieved primarily through protected areas. OECMs could be used to complement protected area networks and may play a greater role post-2020."[94] It is hoped that OECMs "will broaden the range of partners contributing to conservation, raise awareness of opportunities, and encourage further area-based conservation actions."[95]

OECMs can help the Government of Ontario fulfil its commitments to expand its protected and conserved areas to meet Target 1 and beyond, as outlined in *One with Nature: A Renewed Approach to Land and Freshwater Conservation in Canada*:

- Priority 1.1: "As responsible federal, provincial and territorial departments, we will seek opportunities to: … implement – and where possible, enhance – our protected areas establishment programs, plans and strategies in recognition of the importance of protected areas to achieve Canada Target 1."
- Priority 3.1: "As responsible federal, provincial and territorial departments, we will seek opportunities to: … work together to design and implement coordinated, connected, representative and effective networks of protected and conserved areas throughout Canada, recognizing that this will be a long-term endeavour and will not be complete by 2020. This priority recognizes the central role these networks play as natural solutions to climate change and biodiversity loss."

Ontario's Ministry of Environment, Conservation and Parks (MECP) has been working with land trusts, Conservation Authorities, municipalities, and others to determine whether any of their properties would qualify as a protected area or OECM and count towards the federal target. Of the many sites assessed during initial screenings (November 2018–November 2019), all but one fell into the Protected Areas category, rather than the OECM category, because their main objective is to protect areas for biodiversity. The first OECM to be identified in Ontario at that time was the Queen's University Biological Station, a 3,400-hectare site, established more than 70 years ago as an ecological research station.

This process could be expanded to include a wider array of public and private landowners that may be individually contributing to biodiversity conservation, such as businesses, educational institutions, and other public agencies (beyond Conservation Authorities, municipalities, and environmental agencies).

The promise of OECMs does not lie in merely counting existing sites that already meet the OECM criteria, but in improving the level of protection of sites so that they meet the criteria for OECMs and Protected Areas shown in Figure 4.4. One with Nature outlined the option of "interim" and "candidate" OECMs, creating space to pursue this opportunity more fully.

- **Interim OECMs** would be those that "have effective protection measures in place and a clear public commitment to complete formal establishment." They would count towards Canada Target 1.
- **Candidate OECMs** would be those with the potential to be OECMs but that currently "lack some of the attributes."[96]

Pursuing such opportunities is in keeping with Recommendation 30 of the National Advisory Panel, which advised all jurisdictions to investigate existing designations "to determine how strengthening the protection associated with such designations may provide opportunities for Canada to meet our Convention on Biological Diversity targets."[97]

With support and leadership from local Indigenous Peoples and Communities, some of the areas identified in this report could also become Indigenous Protected and Conserved Areas (IPCAs), a designation that would provide long-term protection through Indigenous laws, governance, and knowledge systems. IPCAs are lands and waters where Indigenous governments have the primary role in protecting and conserving ecosystems. Culture and language are the heart and soul of an IPCA. IPCAs vary in terms of their governance and management objectives, but generally share three essential elements.

1. IPCAs are Indigenous-led

Indigenous governments have the primary role in determining the objectives, boundaries, management plans and governance structures for IPCAs as part of their exercise of self-determination. A range of partnerships may support these acts of self-determination, including with Crown governments, environmental NGOs, philanthropic bodies, or others. IPCAs are, in essence, Indigenous-led conservation initiatives that reflect the objectives and needs of their respective nations or governments and emerge through transparent negotiations.

2. IPCAs represent a long-term commitment to conservation

Indigenous Peoples take a multi-generational view of stewarding their territories. Therefore, an IPCA represents a long-term commitment to conserve lands and waters for future generations.

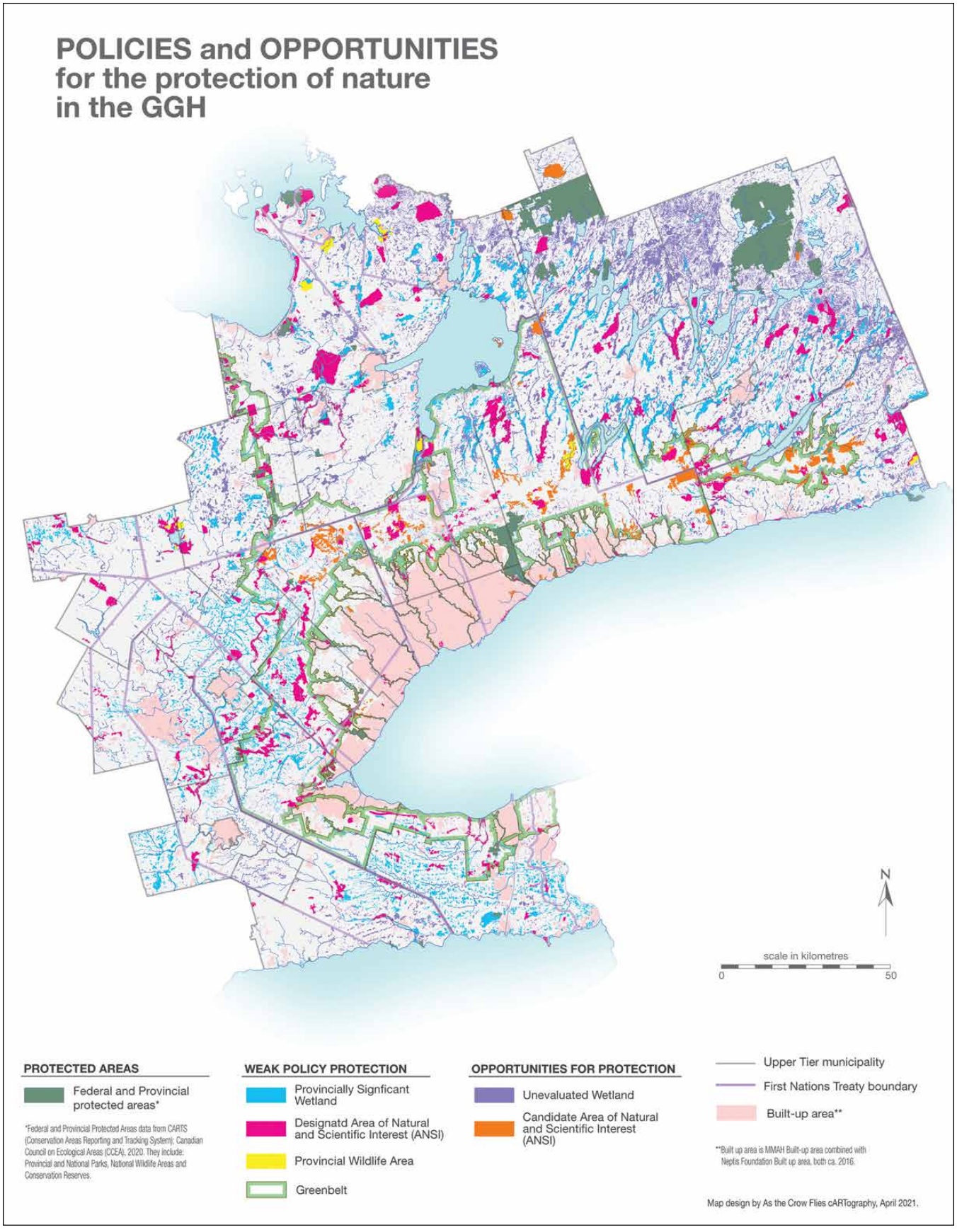
3. IPCAs elevate Indigenous rights and responsibilities

Indigenous Peoples have long-standing physical and spiritual relationships with the lands and waters within their respective territories, and with the natural cycles that determine their use. These relationships have always included the right to benefit from the bounty of the natural world and the reciprocal responsibility to care for and respect the land and water, consistent with natural and Indigenous law, for future generations. In IPCAs, Indigenous Peoples' continued relationship with the land and water must be assured by acknowledging the authority that Indigenous governments have to work with their people on how to use the land and water while achieving conservation and cultural objectives.

Quoted from *Together We Rise* (2018). Indigenous Circle of Experts.[98]

Figure 4.5 identifies some of the opportunities for increasing the protection of lands for biodiversity in the GGH, including currently unevaluated wetlands and potential Areas of Natural and Scientific Interest (ANSIs). See Appendix D for more information on protected areas in the GGH.

Figure 4.5 *Areas of Opportunity for the protection of nature in the GGH*



4.1 Provincial Wildlife Areas

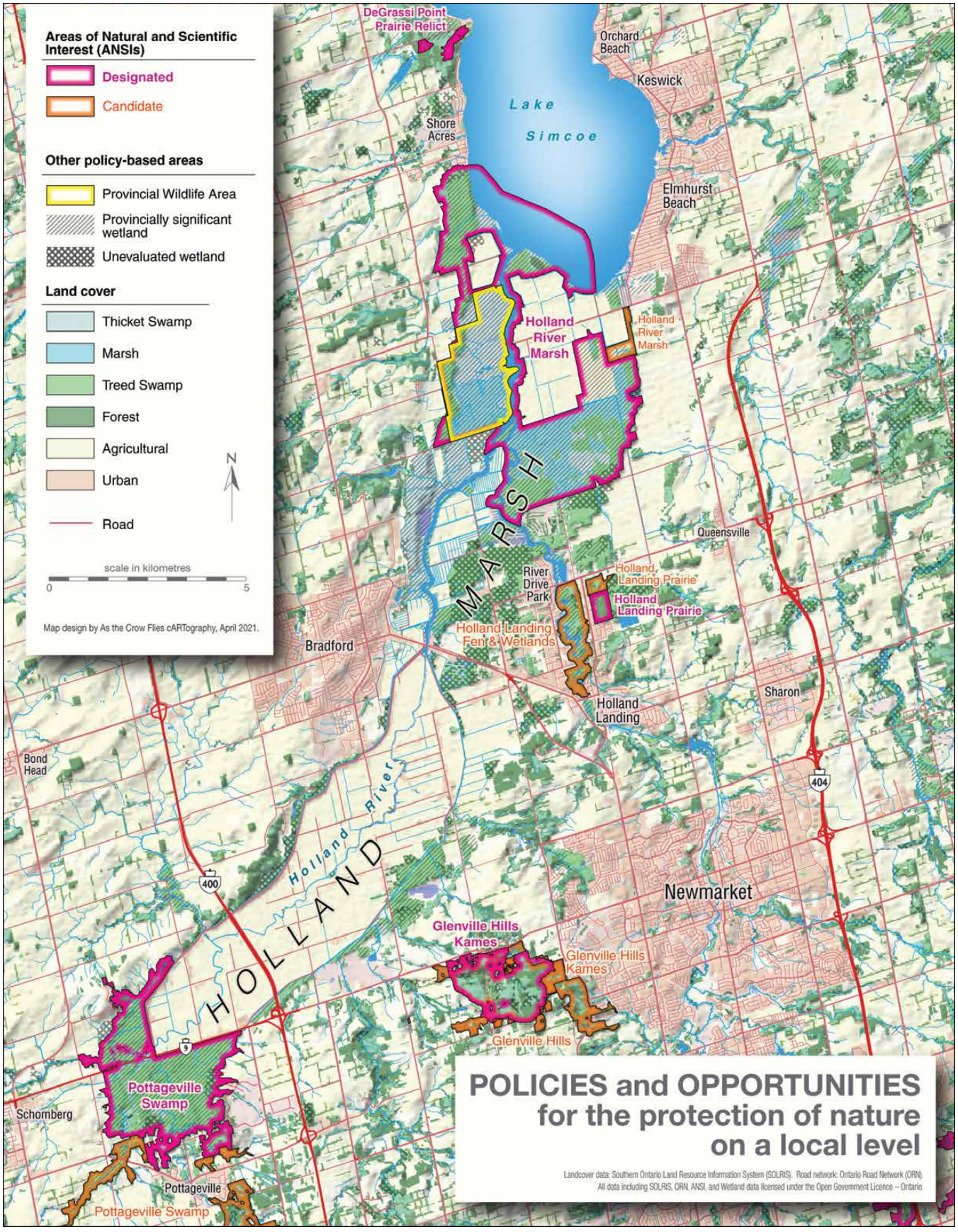
Provincial Wildlife Areas (PWAs) are unceded (Crown) land sites that are managed for wildlife and outdoor recreation, particularly for hunting and wildlife viewing. The 18 PWAs in southern Ontario cover more than 12,500 hectares in total (see Figure 4.6). Seven are in the GGH, covering more than 5,800 hectares of high-quality conservation lands. No overriding land use or resource management policy applies to all PWAs. Rather, management policies for individual PWAs are determined through local planning and vary from one to the next.

Figure 4.6 *Provincial Wildlife Areas in Southern Ontario*

4.1.1 PWAs in the Greater Golden Horseshoe

Holland Marsh PWA (573 hectares): Straddling the Holland River at the south end of Lake Simcoe, this PWA is a PSW and an ANSI. It is part of a wetland complex that is home to species at risk such as bank swallow, least bittern, and eastern prairie white-fringed orchid. This The lands surrounding this PWA are also a good example of how evaluating wetlands and making candidate ANSIs designated ANSIs could scale up protection in an area. The unevaluated wetland surrounding the designated ANSI is nearly as large as the PWA itself and connect to a candidate ANSI to the south (see Figure 4.7).

Figure 4.7 *Holland Marsh*



Brighton PWA (392 hectares): Situated north of Presqu'ile Provincial Park in Northumberland County, this PWA overlaps with an Area of Natural and Scientific Interest (ANSI) designated for topographical features such as beaches, spits, and wave-cut bluffs of the former glacial Lake Iroquois. It is home to several species at risk, including Blanding's turtle, snapping turtle, wood thrush, eastern wood-pewee, and butternut.

Nonquon PWA (1,120 hectares): Part of an important wildlife corridor along the Nonquon River, connecting to Lake Scugog, this PWA is located within the Greenbelt. It is a Provincially Significant Wetland (PSW) that is home to several species at risk, including Blanding's turtle and least bittern.

Tiny Marsh PWA (976 hectares): This PWA is a PSW and part of an Important Bird Area (candidate Key Biodiversity Area). Bordered by county forest to the north and west, it is part of an important natural corridor connecting forest habitat to Georgian Bay. Species at risk observed at the marsh include least bittern, black tern, and Blanding's turtle.

Wye Marsh PWA (1,110 hectares): On a headland south of Georgian Bay, this PWA is an Important Bird Area (candidate Key Biodiversity Area), an ANSI, and a PSW. It provides habitat for 14 species at risk, including least bittern and black tern. A colonial waterbird Nesting Area, Wye Marsh is also home to about 10 per cent of Ontario's trumpeter swan population.

Matchedash Bay PWA (1,046 hectares): Adjacent to Sturgeon Bay at the south end of Georgian Bay, this PWA is an Important Bird Area (candidate Key Biodiversity Area), a PSW and an ANSI, recognized for its importance internationally under the Ramsar Convention on Wetlands, an intergovernmental treaty to help conserve wetlands. It is home to many species at risk, including Blanding's turtle, least bittern, black tern, and golden-winged warbler.

Luther Marsh (616 hectares): located in the headwaters of the Grand River watershed, this PWA is part of the Luther Marsh Wildlife Management Area (5,900 hectares) in Wellington County. It is a PSW, an ANSI, and an Important Bird Area (candidate Key Biodiversity Area) and supports species at risk such as Butler's garter snake, least bittern, and black tern.

4.1.2 Do PWAs meet the Protected Area or OECM criteria?

- *Clearly defined boundaries?* Yes. PWAs have clearly defined boundaries, although these are not established in regulation.
- *Effective means to control all activities likely to negatively impact biodiversity?* A qualified yes. Many but not all PWAs have management plans in place, outlining management approaches and allowable activities. The effectiveness of such measures in preventing negative impacts (for example, from allowable activities in some PWAs, such as commercial bait fish harvesting, trapping, agriculture, and road development) would need to be evaluated on a site-by-site basis. The ability to oversee prohibited and potentially harmful recreational activities, such as off-road vehicle use, would also need to be assessed.
- *Long-term and year-round protection?* No. PWAs are not permanently protected, although management policies apply year-round.
- *Managed by governing authorities in ways that deliver conservation outcomes, regardless of objectives?* To be determined. PWAs would need to be assessed individually to determine whether management approaches result in positive conservation outcomes.

4.1.3 Bridging the gap

For PWAs to meet the Protected Area or OECM standard and count towards Canada Target 1, the Government of Ontario, in partnership with local managing agencies, would need to implement measures to:

- provide permanent protection
- prevent harmful impacts from resource use and recreational activities
- assess the effectiveness of management approaches to conservation

Such measures could include permanently designating all PWAs through regulation and setting standards through policy that permits only sustainable uses, compatible with biodiversity conservation. This could be done, for example, under the *Public Lands Act*, which provides various means for designation and management.[99] Ontario took this approach to initially protect 292 Conservation Reserves before the passing of Ontario's *Provincial Parks and Conservation Reserves Act, 2006* (PPCRA). The government used the *Public Lands Act* to designate and regulate Conservation Reserves through Ontario Regulation 805/94 which prohibited "mining, commercial forest harvest, hydro-electric power development, the extraction of aggregate and peat or other industrial uses."[100] Eventually, these sites were all regulated under the PPCRA.

Other measures could include investments to enable local planning authorities to create or update management plans and conduct baseline inventories of biodiversity (species, habitats) for assessing conservation outcomes and managing sites to prevent harm to biodiversity.

Given the emphasis on recreation, including hunting, in PWAs, designation as an OECM rather than as a Protected Area may be more acceptable to local managing authorities. Further assessment is needed to determine whether specific PWAs could count as interim or candidate OECMs.

4.1.4 Other conservation opportunities for PWAs

With support and leadership from Indigenous Peoples and Communities, some PWAs could be eligible to become Indigenous Protected and Conserved Areas (IPCAs), a designation that would provide long-term protection through Indigenous laws, governance, and knowledge systems.

Another option would be for the Ontario government to regulate some PWAs as conservation reserves, which are permanently protected under the *Provincial Parks and Conservation Reserves Act*. In September 2020, Ontario's Ministry of Environment, Conservation and Parks announced its intention to permanently protect Point Petre PWA (1,452 hectares) on the south shore of Prince Edward County as a Conservation Reserve.

RECOMMENDATIONS

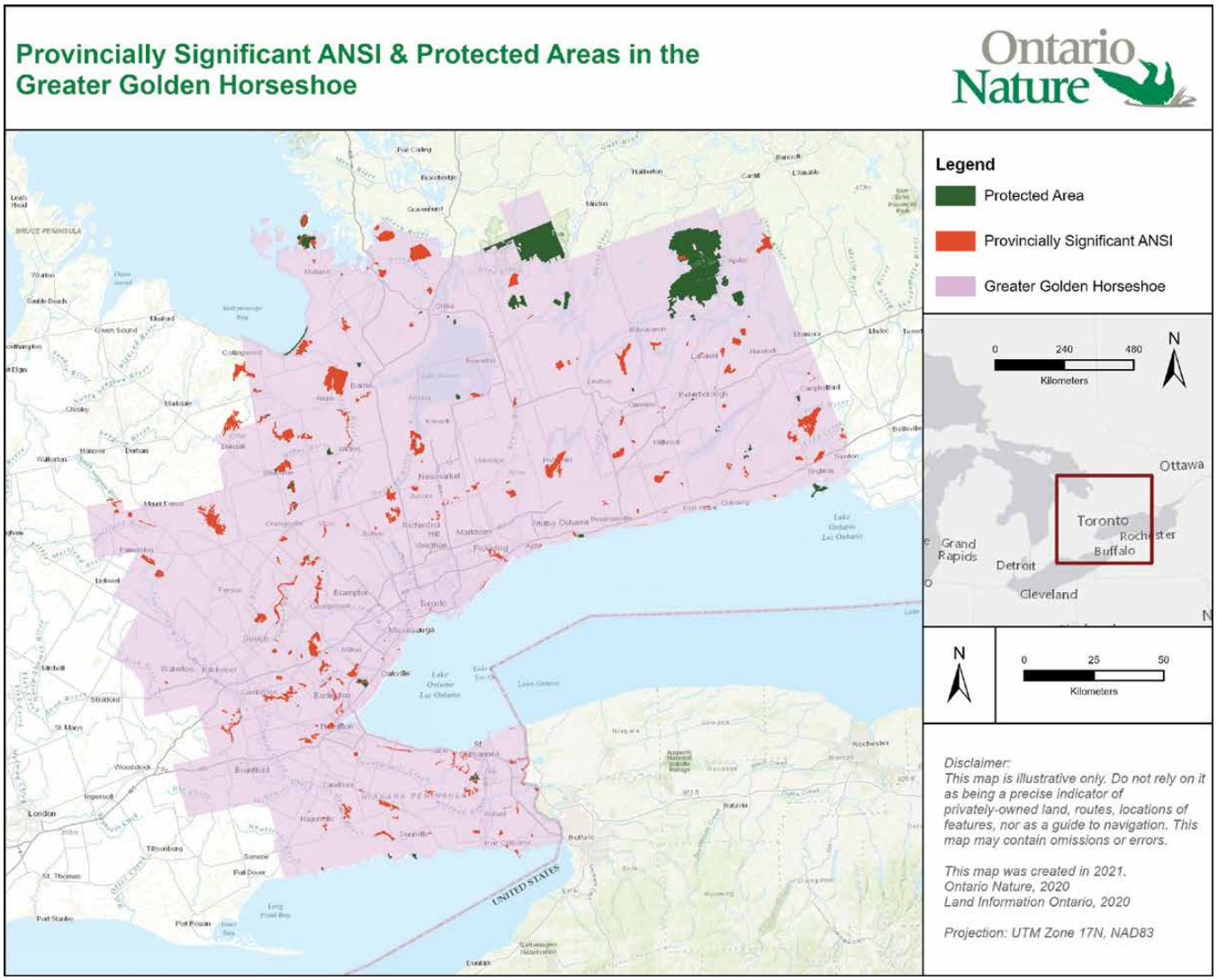
The Ontario government should:

- develop land use or resource management policies that apply to all PWAs through the Public Lands Act to make them meet more of Canada's Target 1 criteria
- conduct further assessment to determine whether specific PWAs could count as interim or candidate OECMs

4.2 Areas of Natural and Scientific Interest (ANSIs)

Areas of Natural and Scientific Interest (ANSIs) are publicly or privately owned areas of land and water designated for significant life science (biodiversity) or earth science (geological) values.[101] In southern Ontario, 1,066 candidate and confirmed ANSIs (401 earth science, 665 life science) have been mapped (see Figure 4.8 for those considered provincially significant), totalling 432,629 hectares (99,275 hectares earth science and 333,354 hectares life science).[102]

Figure 4.8 *Provincially significant ANSIs in the Greater Golden Horseshoe*



"Earth Science ANSIs are geological in nature and consist of some of the most significant representative examples of the bedrock, fossil and landforms in Ontario and include examples of ongoing geological processes."

"Life Science ANSIs are significant representative segments of Ontario's biodiversity and natural landscapes including specific types of forests, valleys, prairies, and wetlands, their native plants and animals and their supportive environments. They contain relatively undisturbed vegetation and landforms and their associated species and communities."[103]

4.2.1 ANSIs and candidate ANSIs in the Greater Golden Horseshoe

Examples of ANSIs in the GGH include:

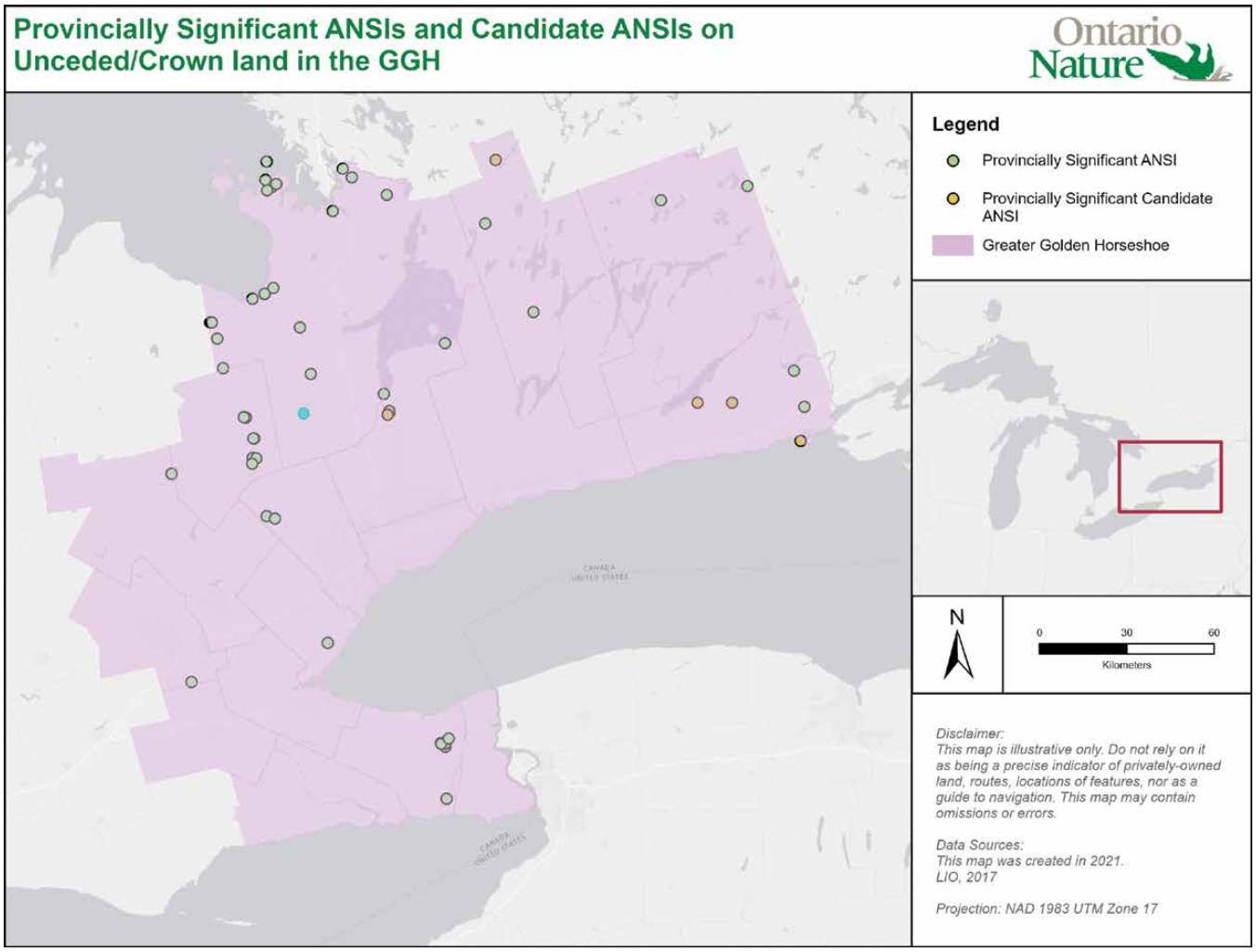
- The **Holland River Marsh** ANSI, which overlaps with a PWA (described above) and a PSW
- **Brighton Bluff**, which overlaps with a PWA (described above)
- **Big Chute Rocklands**, **Matchedash Crown Land**, and **Matchedash Lake** ANSIs, which fall within the **Matchedash Wildlands**, an important wildlife corridor stretching from just east of the southern tip of Georgian Bay to Swift Rapids, north of Orillia
- **Minesing Swamp** Life Science ANSI, which overlaps with a PSW and several parcels of unceded/Crown land
- **Oshawa Second Marsh** and **McLaughlin Bay** candidate ANSI, overlapping with a PSW on Lake Ontario

Table 4.1 *Provincially significant ANSIs in the Greater Golden Horseshoe*

	# of ANSIs	ANSI hectares	# of Candidate ANSIs	Candidate ANSI hectares
GGH	254	92,945 ha	92	31,457 ha
Greenbelt	40	19,152 ha	29	10,273 ha
Proposed Bluebelt	64	31,966 ha	16	6,172 ha
Unceded/Crown land in GGH	56	43,165 ha	7	4,783 ha

The GGH has 56 provincially significant ANSIs and seven candidate ANSIs on or partly on unceded (Crown) land (see Figure 4.9). They represent prime opportunities to advance the protection of ecologically significant sites in the most heavily populated part of the province, where such opportunities are scarce.

Figure 4.9 *Provincially significant ANSIs on unceded (Crown) land in the GGH*



ANSIs and Candidate ANSIs represent a significant conservation opportunity in the GGH. The ecological importance of the sites has been established for 512 ANSIs (regionally and provincially significant) and 114 candidate ANSIs (regionally and provincially significant), totalling just over 195,170 ha. Of these, 254 are provincially significant ANSIs and 92 are provincially significant candidate ANSIs.

Several provincially significant ANSIs in the GGH are already protected areas or fall within protected areas, legislated under the *Provincial Parks and Conservation Reserves Act* (for example, Waubaushene Beaches Nature Reserve, Wasaga Beach Provincial Park, Mono Cliffs Provincial Park, Pretty River Valley Provincial Park, Holland Landing Prairie Provincial Park). The possibility exists to provide permanent, legal protection to these significant natural areas. Most ANSIs, however, are not sufficiently protected to count towards Canada Target 1.

4.2.2 How ANSIs are protected

All of Ontario's ANSIs and candidate ANSIs were identified in the early 1980s, and graded as provincially, regionally, or locally significant. Supporting policy was endorsed in 1983 and implementation guidelines were approved in 1988. According to this policy: "ANSIs encourage the protection of additional areas not regulated as provincial parks and provide a focus for both the public and private sectors to contribute to the protection of Ontario's natural heritage."[104]

Even though ANSIs were intended to complement the Provincial Parks program and protect areas of provincial, regional, or local significance, they are subject to resource extraction (e.g., logging, mining) and development, except where they are designated and protected under other laws and policies. These include:

- Policy 2.1 of the Provincial Policy Statement (PPS) under the *Planning Act*: Provincially significant ANSIs and adjacent lands are protected from development and site alteration (residential and commercial development, grading, excavation) unless it has been demonstrated that there will be no negative impacts on them or their ecological functions.
- The Niagara Escarpment Plan (1.3.2, 1.4.2, 2.7.1, 2.7.7): ANSIs are considered key natural heritage features and are protected from development (with exceptions for single dwellings, infrastructure, flood control projects, and Bruce Trail facilities).[105]
- The Greenbelt Plan (3.2.5): Provincially significant ANSIs are considered Key Natural Heritage features and are protected from development and site alteration within the Natural Heritage System (with some exceptions for infrastructure, flood control projects, and aggregate, recreational, shoreline, and existing uses).
- The Oak Ridges Moraine Conservation Plan (22.(1), 30.(1), 35.(1)): Provincially Significant ANSIs are considered key natural heritage features and are protected from development and site alteration (with exceptions for infrastructure, flood control projects, agriculture, aggregate operations, and recreation).
- Agreements associated with the Ontario Minister of Natural Resources and Forestry's Conservation Land Tax Incentive Program.
- Easements under the authority of the *Ontario Heritage Act*.
- Identification under Section 12 of the *Public Lands Act*.

Although ANSIs were originally excluded from prospecting and staking under Section 36 of the Mining Act, this section was repealed in 2009.

4.2.3 Do ANSIs meet the Protected Area or OECM criteria?

- Clearly defined boundaries? Yes, ANSIs have clearly defined boundaries.
- Effective means to control all activities likely to negatively impact biodiversity? No. There are many loopholes in existing policy protections.
- Long-term and year-round protection? No.
- Managed by governing authorities in ways that deliver conservation outcomes? Some are, but not all.

Designation as an ANSI is not a sufficient protection mechanism on its own to count towards Canada Target 1. Additional layers of protection are needed. Nevertheless, the ANSI designation has strengthened the case for recognizing certain sites as counting towards Target 1 – for example, Conservation Authority or land trust properties that Ontario's Ministry of Environment, Conservation and Parks has recognized as protected.

Three ANSIs located within the core protection zone of the Madawaska Highlands Land Use Plan qualify as protected areas (not OECMs, because the primary purpose is conservation). They are Fortune-Schooner, Griffith Uplands, and Summit Lake ANSIs, totalling 3,948 hectares.[106] Only the Crown land portions of the ANSIs count, given the extra protection provided by zoning within the land use plan.

4.2.4 Bridging the gap

Because ANSIs are found on public and private lands, a variety of strategies could be used to enable them to count towards Canada Target 1. On private lands, measures could include:

- Acquisition by land trusts or Conservation Authorities
- Conservation easements under the *Conservation Lands Act and Ontario Heritage Act*

On public lands, measures could include:

- Assessing whether overlapping protections (regional land use plans, municipal policies) are sufficient. The City of London provided a successful model in designating three ANSIs (Kains Road River Valley, Byron Bog, and Westminster Ponds) as Environmentally Significant Areas. Because of the high level of protection provided in its municipal policies, all three were determined to count as protected areas towards Canada Target 1.
- Where overlapping protections are not sufficient, taking steps to enhance protections for ANSIs under the PPS, the Greenbelt Plan, or other land use plans.
- Regulating specific ANSIs as provincial parks or conservation reserves, which are permanently protected under the PPCRA. A precedent was set during the Lands for Life planning exercise (1997–99), when many provincially significant ANSIs in the planning area were designated as Conservation Reserves, Provincial Parks, or Enhanced Management Areas.[107]
- Incorporating ANSIs into nearby existing Provincial Parks or Conservation Reserves.[108]
- Identifying ANSIs on unceded (Crown) land to be protected through regulation under the *Public Lands Act*.

In addition, on both private and public lands there is an opportunity to enhance protection of candidate ANSIs under existing policy by completing the approval process of designating them as ANSIs.[109] In the GGH alone, completing the approval process for provincially significant ANSIs represents a conservation opportunity of more than 31,000 hectares, including 4,783 hectares on unceded (Crown) land.[110]

4.2.5 Other conservation opportunities for ANSIs

With support and leadership from Indigenous Peoples and Communities, some ANSIs could be eligible to become IPCAs, a designation that would provide long-term protection through Indigenous laws, governance, and knowledge systems.

RECOMMENDATIONS

The Ontario government should:

- re-establish the original vision for ANSIs, which were intended to complement the Provincial Parks program and protect areas of provincial, regional, or local significance
- make candidate ANSIs full ANSIs
- continue to create protected and conserved areas where lands meet the criteria, starting with unceded (Crown) land and lands close to existing protected and conserved areas

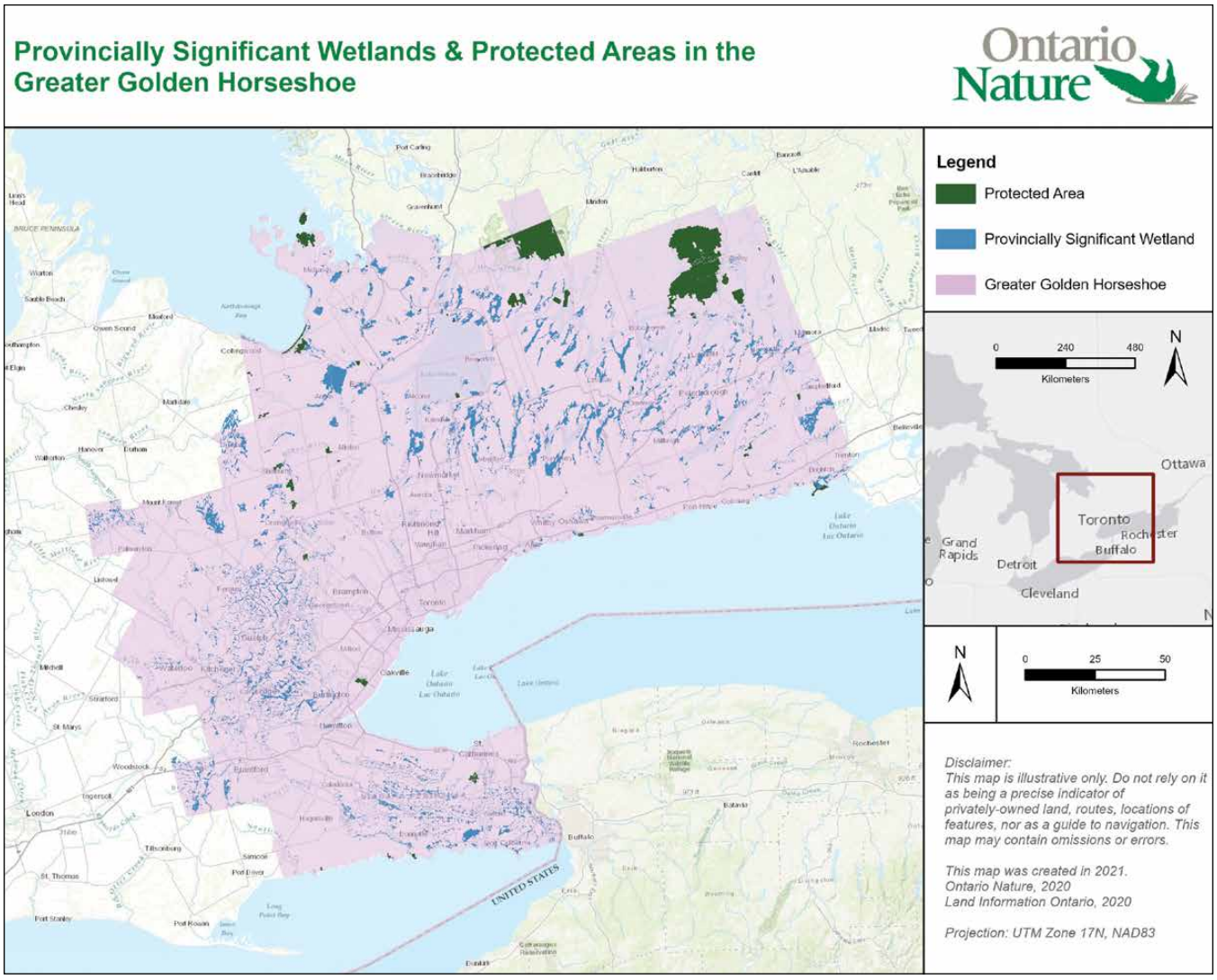
4.3 Provincially Significant Wetlands

Provincially Significant Wetlands (PSWs) are identified by the Ministry of Northern Development, Mines, Natural Resources and Forestry based on assessments using the Ontario Wetland Evaluation System. Evaluation criteria address ecosystem and human utility values, which include:

- groundwater storage and release
- provision of habitat for wildlife species, including species at risk
- ecosystem productivity and biological diversity
- flood damage prevention
- harvestable product provision
- improved water quality
- recreational opportunities[111]

PSWs and other wetlands represent a significant conservation opportunity in the GGH, which has more than 203,000 hectares of PSWs and more than 229,000 hectares of unevaluated wetlands. Of the PSWs, more than 28,000 hectares are on unceded (Crown) land (see Figure 4.10).

Figure 4.10 *Provincially Significant Wetlands and Protected Areas in the GGH*



4.3.1 How wetlands are protected

Since 2005, PSWs in southern and central Ontario (that is, from Sault Ste. Marie southwards) have been accorded the highest level of protection for natural heritage under the Provincial Policy Statements (PPS): development and site alteration are not permitted.[112] Development and site alteration are also prohibited on adjacent lands unless an evaluation has confirmed that there will be no negative impacts on the neighbouring PSW.[113] For provincially significant coastal wetlands, the strict prohibition against development and site alteration applies across the province.[114]

> "Currently, wetlands are managed through a variety of policies that include over 20 different pieces of legislation administered and/or implemented by five provincial ministries, two federal departments, a provincial agency (Niagara Escarpment Commission), 36 Conservation Authorities and 444 municipalities."[115]

No loss of wetland function or area has been a policy goal for more than 20 years in Ontario. This goal is supported by many laws and policies governing wetland conservation and development in the GGH in addition to the PPS. These include the *Conservation Authorities Act*, the *Niagara Escarpment Planning and Development Act* and Plan, the *Oak Ridges Moraine Conservation Act* and Plan, the *Greenbelt Act* and Plan, the *Lake Simcoe Protection Act* and Plan, the *Great Lakes Protection Act, 2015*, and municipal plans and policies.[116]

The Niagara Escarpment Plan, Oak Ridges Moraine Conservation Plan, Greenbelt Plan, and the Lake Simcoe Protection Plan also provide protection for unevaluated wetlands and wetlands that have been evaluated but do not meet the threshold for provincial significance.

4.3.2 Do PSWs meet protected area and OECM criteria?

- *Clearly defined boundaries?* Yes. PSWs have clearly defined boundaries.
- *Effective means to control all activities likely to negatively impact biodiversity?* No. There are exceptions for infrastructure.
- *Long-term and year-round protection?* Theoretically yes, although the use of Ministers' Zoning Orders to override protection calls this into question.
- *Managed by governing authorities in ways that deliver conservation outcomes?* No. Active management of PSWs is not required, although in some cases, such as on Conservation Authority lands or land trust properties, there is active management to protect biodiversity.

In a 2009 Ministry of Northern Development, Mines, Natural Resources and Forestry report, *Ontario's Natural Heritage Areas*, the authors offered a preliminary assessment of whether PSWs could be considered fully protected. They indicated that this could be the case where PSWs are protected under the PPS "and/or through municipal official plans, land trusts, legal agreements, or other protection mechanisms." They noted, however, that PSWs could be affected by incompatible land uses and that therefore a site-by-site evaluation would be necessary.[117] Nevertheless, in light of the Canada Target 1 criteria, they clearly would not count as fully protected.

A successful southern Ontario model

The City of London designated two PSWs (Sifton Bog and Westminster Ponds – both of which are also ANSIs) as Environmentally Significant Areas in its municipal polices. Because of the high level of protection provided, both were screened and determined to count as protected areas towards Canada Target 1.

In terms of enabling PSWs to count towards Canada Target 1, it is important to note the strong alignment with one of the four goals of the *Wetland Conservation Strategy for Ontario 2017–2030* which is: "Develop conservation approaches and improve policy tools to conserve the area and function of Ontario's wetlands."[118] In keeping with this goal, the strategy sets out several actions that the government is taking or will take:

- Reviewing provincial laws, regulations, and policies, with the goal of strengthening Ontario's wetland policies.
- Supporting the development of policy tools to improve the conservation of all wetlands, including the protection of provincially significant, coastal wetlands, and other locally and regionally important wetlands.
- Enhancing policy and guidance for wetland conservation on Crown land, including resource management, land administration, environmental assessment, and the role played by land use planning.
- Continuing and enhancing protection of wetlands through the provincial Protected Areas System and other effective area-based conservation measures.[119]

It is encouraging that the Ontario government intends to enhance policy to better protect all wetlands and that protected areas and OECMs are seen as a means of enhancing wetland protection.

Second Marsh: example of a Canada Target 1 wetland opportunity

Second Marsh is a municipally owned coastal PSW and ANSI on Lake Ontario. Connected to the McLaughlin Bay Wildlife Reserve (private owner) and Darlington Provincial Park to the east, it supports species at risk such as least bittern and Blanding's turtle as well as provincially rare plants such as wild rye and bushy cinquefoil. To determine whether the site could count towards Canada Target 1, a first step would be to assess the strength of municipal policies, in combination with provincial policies protecting PSWs.

4.3.3 Bridging the gap

Because PSWs are found on public and private lands, a variety of strategies would be needed to enable them to count towards Canada Target 1.

On private lands, measures could include:

- Acquisition and management by land trusts or Conservation Authorities
- Conservation easements under the Ontario Heritage Act

RECOMMENDATIONS

Conservation Authorities and land trusts should work with private landowners through land securement programs (acquisition or easements) for lands of high ecological, social, or cultural value, including PSWs.

The provincial government should explore opportunities under the *Great Lakes Protection Act* to enhance protection for PSWs which could include regulating PSWs under the Act.

On public lands, measures could include:

- Assessing whether overlapping protections for PSWs are sufficient in regional land use plans, municipal policies, and other policies – and enhancing them where they are not.
- Incorporating PSWs into existing Provincial Parks or Conservation Reserves.
- Enhancing protections under the PPS, the Greenbelt Plan, or other land use plans.
- Identifying PSWs on unceded (Crown) land for protection through regulation under the *Public Lands Act*.[120]
- Proposing an initiative under the *Great Lakes Protection Act* to enhance protection for PSWs which could include regulating PSWs under the Act.[121]

RECOMMENDATIONS

The Ontario government should identify PSWs on unceded (Crown) land to be protected through regulation under the *Public Lands Act*.

As part of its review of laws, regulations, and policies to strengthen wetland protection, the Ontario government should consider:

- Amending the PPS to require that wetland evaluation occur before development approvals are granted and all wetlands are deemed to be significant until an evaluation demonstrates otherwise.
- Repealing amendments to the *Planning Act* enacted in 2020 so that the power to deny development approvals on PSWs is fully restored to Conservation Authorities.

Table 4.2 *Protected Area/OECM criteria in relation to provincial policy*

	Area (ha) in GGH	Clearly defined boundaries?	Effective means to control all activities likely to negatively impact biodiversity?	Long-term and year-round protection?	Managed by governing authorities in ways that deliver conservation outcomes, regardless of objectives?
PWAs	5,800 ha of high- quality conservation lands (7 PWAs)	Yes	Many but not all PWAs have management plans in place. Their effectiveness in preventing negative impacts (for example, from allowable activities such as commercial bait fish harvesting, trapping, agriculture, and road development) would need to be evaluated on a site-by-site basis. The ability to prohibit potentially harmful recreational activities, such as off-road vehicle use, would also need to be assessed.	No. PWAs are not permanently protected, although management policies apply year-round.	PWAs would need to be assessed on a site-by-site basis to determine whether management approaches result in positive conservation outcomes.
ANSIs	92,945 ha (221 ANSIs) plus 31,457 ha (candidate ANSIs)* including 56 (43,165 ha) ANSIs and 7 (4,783 ha) candidate ANSIs on unceded (Crown) land	Yes	No. The policies have too many loopholes.	No.	Only in some cases.
PSWs	More than 203,000 ha of PSWs and more than 229,000ha of unevaluated wetlands in the GGH. Of the PSWs, 28,000 ha are on unceded (Crown) land	Yes	No. There are exceptions for infrastructure.	Yes, although Minister's Zoning Order (MZOs) can override the protection.	No. Active management of PSWs is not required, though in some cases, (e.g., Conservation Authority lands or land trust properties), there is active management to protect biodiversity.

4.4 County and regional forests

The many well-managed county and regional forests in the GGH reflect efforts to conserve and restore biodiversity. Some are Forest Stewardship Council (FSC)-certified (see section 7.2), indicating a high level of attention to species at risk and other conservation values, as well as social and economic values. These forests include:

- Simcoe County Forest (about 13,300 hectares, 150 forest tracts)
- York Regional Forests (2,379 hectares in 23 tracts)
- Northumberland County Forest (2,225 hectares)
- Peterborough County Forest (2,108 hectares)
- Halton Regional Forests (703 hectares)
- Durham Regional Forest (245 hectares)

Some of these county and regional forests could count as OECMs. Given the diversity of approaches to managing county forests in Ontario, opportunities would vary from one place to another, based on site-specific assessments and whether the sites met the four criteria:

- Clearly defined geographic boundaries
- Effective means to control all activities likely to negatively impact biodiversity
- Long-term and year-round protection
- Management by governing authorities in ways that deliver conservation outcomes, regardless of objectives.

Most if not all county and regional forests would meet the first criterion, but might fall short on the other three. These forests are managed to meet many objectives, including conservation, recreation, and in some cases timber harvesting. Some forests within a county might meet the OECM criteria, while others might not. Similarly, parts of a forest might be recognized – for example where restrictions on activities, ecological restoration, invasive species control, plantation thinning, or other conservation measures are occurring – whereas others might not.

Even if a county or regional forest did not currently meet the standard, if the intent were to enhance the level of protection to meet the standard, it could be considered an interim or candidate OECM.

In addition to upper-tier municipal forests, smaller parcels of natural lands owned by lower-tier municipalities may or may not qualify for protection, but nonetheless could be protected through improved policies, restored, and stewarded. Conservation efforts that include community participation can result in better support and long-term stewardship, but these efforts take time and capacity that municipal staff may not have.

With support for additional staff or through relationships with local NGOs and Conservation Authorities, communities could become a major force for change to restore and advocate for areas. The GGH has many successful examples of people and communities already doing this. Several examples are included in Sections 6 and 7.2.3 of this report.

4.5 Conservation Authority and Municipal Lands

Conservation Authorities across the province manage a total area of more than 150,000 hectares.[122] The 14 Conservation Authorities in the GGH (see Figure 4.11) are:

- Kawartha Conservation
- Ganaraska Region Conservation Authority
- Lake Simcoe Region Conservation Authority
- Toronto and Region Conservation Authority
- Grand River Conservation Authority
- Hamilton Conservation Authority
- Long Point Region Conservation Authority
- Otonabee Conservation
- Nottawasaga Valley Conservation Authority
- Central Lake Ontario Conservation Authority
- Credit Valley Conservation
- Conservation Halton
- Niagara Peninsula Conservation Authority
- Lower Trent Conservation

Figure 4.11 *Conservation Authority administrative boundaries*

The level of protection of some Conservation Authority lands is being assessed to determine whether they meet the Protected Area or OECM criteria. Recent screenings have identified two additional OECMs on Conservation Authority properties:

- Scanlon Creek Conservation Area, owned by Lake Simcoe and Region Conservation Authority.
- Warsaw Caves, owned by Otonabee Region Conservation Authority.

Publicly available information about the lands that Conservation Authorities own and manage would be helpful for regional conservation planning. Although some Conservation Authorities, such as Conservation Halton, make this information available on open data platforms, all Conservation Authorities should do so to facilitate regional assessments beyond watershed or municipal borders and to ensure consistent data are used for assessments. Open data policies and portals are making this information more accessible over time, but much of the GGH still does not make information about Conservation Authority lands easily accessible.

RECOMMENDATIONS

Municipalities and Conservation Authorities should make property information – including property extents and boundaries – publicly available through open data initiatives to support research and conservation planning efforts. While a few municipalities and Conservation Authorities already put this information online, most do not. Support from upper levels of government to get this information online would help with future regional conservation prioritization and planning.

Municipalities are also landowners with large tracts of land. County and regional forests, Environmentally Significant Areas (ESAs), and parklands offer potential opportunities as Protected Areas, OECMs, or IPCAs, but would need to be assessed by each governing authority. Assessments are currently ongoing in the GGH.

A candidate OECM example is Colonel Samuel Smith Park, an Environmentally Significant Area owned by the Toronto and Region Conservation Authority and managed by the City of Toronto for recreation. Assessed in 2018, if fell short of full OECM status due to issues associated with high foot traffic and off-leash dog areas. Nevertheless, it was deemed a candidate OECM, which means that the governing authorities are committed to addressing the gaps and elevating its status to a full OECM.

As described in Section 5.2, municipalities have mapped natural heritage systems and associated policies in the GGH. However, there is a varying degree of protection for cores, corridors, and buffers within the policies. Ontario Nature has documented best practices in natural heritage system planning in its *Best Practices Guide to Natural Heritage Systems Planning*.[123]

Biodiversity objectives can and should also be integrated into other municipal policy related to green infrastructure, urban forests, stormwater, climate change adaptation, and park plans. As 498 municipal governments across Canada have declared a climate emergency, nature-based solutions – including protection, restoration, and stewardship of natural areas – should be central to these efforts to protect carbon stored in natural areas and the adaptation benefits that natural areas provide.

The City and Biodiversity Index, an internationally developed self-assessment tool used in Montreal and Ottawa is designed to help municipalities evaluate urban conservation efforts and progress in reducing the rate of biodiversity loss in urban ecosystems

ICLEI Canada and the Toronto and Region Conservation have developed *biodiverCities: A Primer on Nature in Cities*, which presents practical and action-oriented steps or "milestones" that municipalities can follow as they pursue a biodiversity plan.

Municipalities and Conservation Authorities also play an important role in voluntary programs both as participants and as administrators of these programs. These voluntary programs are discussed in Section 7.

RECOMMENDATIONS

Municipalities should assess their policies and protections to see where gaps are for significant features to meet Canada's Target 1 criteria and begin to fill those gaps (for example, by assessing ESAs for protection).

Municipalities and Conservation Authorities that manage large conservation areas, parklands, and forests should continue to assess opportunities for protection of these areas as Protected Areas, OECMs, or IPCAs and address gaps to qualify for these designations in the future.

Municipalities updating natural heritage system and other related policies should follow best practices and incorporate biodiversity considerations throughout municipal policy in a similar way to that in which climate change considerations are now being considered.

4.6 Private Lands

Most lands in the GGH are in private ownership. The cost of land in this region makes purchasing lands outright to protect them prohibitive in most cases. Fortunately, many landowners want to steward and protect their lands.

Public policy can play a limited role in protecting natural features on private lands, but monitoring and enforcement may be limited. Additional stewardship activities such as management and restoration are not regulated.

Voluntary measures and programs play a key role in protection, conservation, education, and good stewardship on private lands. Even within a single program or organization, such as land trusts or community-led organizations, outcomes could include greater protections through OECMs or IPCAs as well as restoration and natural asset management.

5. Connectivity for the Near-Urban Nature Network

The Government of Canada does not have any specific guidelines or criteria for identifying or designating ecological corridors as they have for protected and conserved areas. Pan-Canadian guidance would be helpful in ensuring consistent approaches across local jurisdictions. Previous groups have reported on regional connectivity in the GGH, including:

- the Nature Conservancy of Canada's Conservation Blueprints (2005)
- Carolinian Canada's Big Picture (2000)
- Bowman and Cordes' Circuitscape[124] (2015)

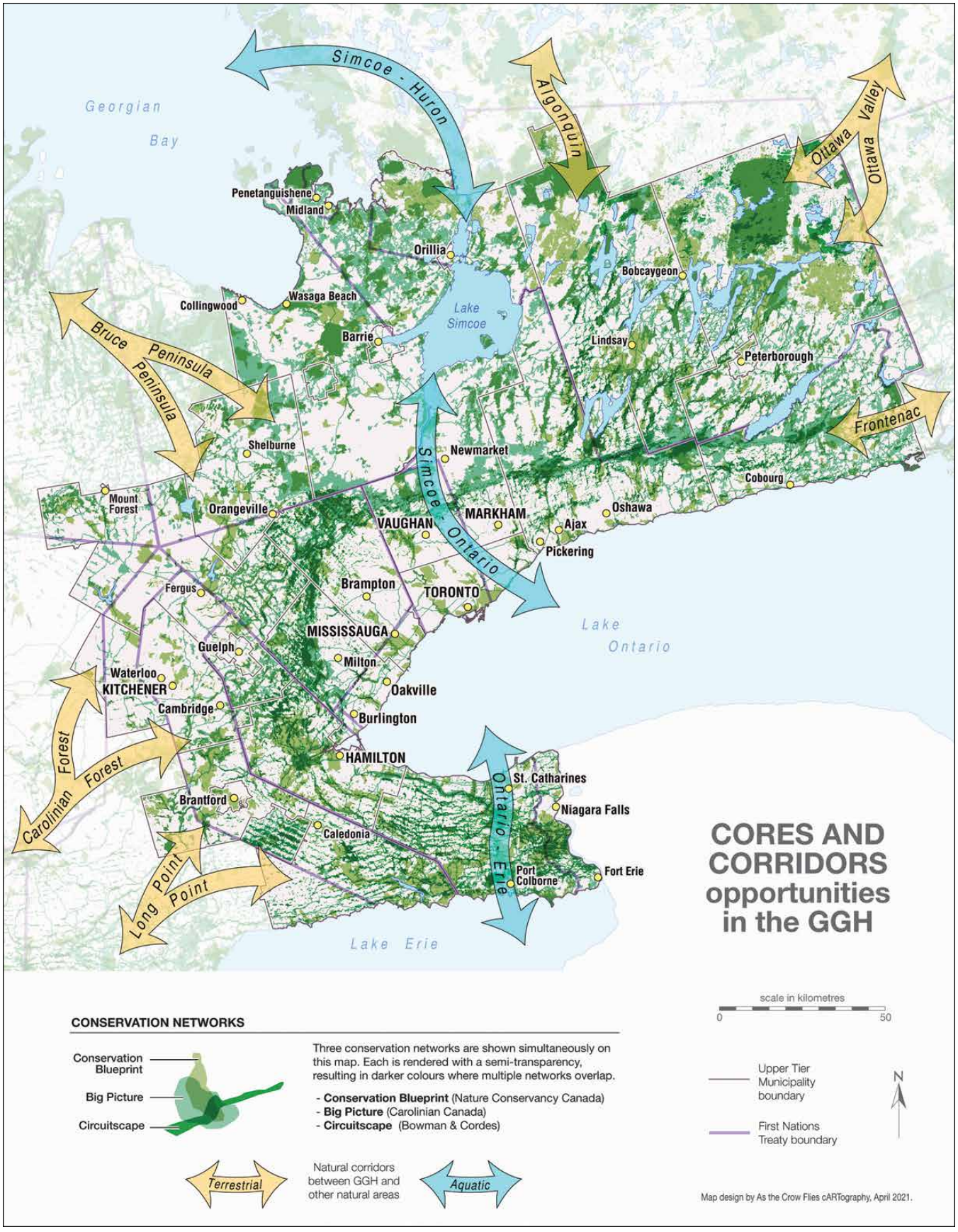
These studies and plans provide a good baseline and, when overlaid, can show areas of agreement for developing an ecological network (see Figure 5.1). However, these efforts were undertaken several years ago (between 2000 and 2015) and the landscape is changing rapidly. With some local exceptions, most of the GGH relies on relatively large-scale connectivity information (using multispecies models based on generalized habitat classification from remotely sensed information at a scale no finer than 30m^2). This work needs to be refined and updated at the local and watershed scale, as barriers to connectivity vary by species and ecological function. For example, a corridor for a mouse looks quite different from a corridor for a deer or a bat.

Connectivity modelling and planning in this region tend to focus more on terrestrial (and wetland) habitats over aquatic ones. While the connectivity of the water resource system is promoted through policy in the four provincial land use plans, the Province has not published any final guidance. Municipality and Conservation Authority staff have expressed the need for clarity in definitions and more accurate mapping data. Many municipalities and Conservation Authorities are still interpreting and conforming to these provincial water resource system policies.[125]

Additional efforts to map connectivity on a smaller scale have been led by Conservation Authorities and NGOs. They include Kawartha Naturally Connected and the Carruthers Creek Watershed Plan's connectivity mapping by Toronto and Region Conservation Authority, which studied forest–forest and forest–wetland connectivity and identified priority areas for connectivity.

Similar approaches should be developed in important areas of regional connectivity across the GGH to guide decisions on protection, restoration, and mitigation measures to help species move across the landscape. The Canadian Council on Ecological Areas (CCEA)'s recent report *Implementing Connectivity Conservation in Canada* noted that Conservation Authorities are well positioned to support these mapping efforts, as they have the broad mandate and expertise to approach corridor mapping in-house.[126] Academic partnerships are also proving successful in supporting connectivity efforts at various scales.

Figure 5.1 *Important ecological cores and corridors of connectivity throughout and beyond the Greater Golden Horseshoe*



Once areas of importance to connectivity have been identified, this information should be incorporated into decision making. The CCEA's *Implementing Connectivity Conservation in Canada* report also suggests that the Strategic Environmental Assessment process could help identify, restore, and protect connectivity. This would be very helpful in the GGH where connectivity could be improved across infrastructure corridors. This recommendation could apply to the provincial environmental assessments as well.

RECOMMENDATIONS

Starting with areas of high ecological, social, or cultural importance and working with local and Indigenous Peoples and Communities and existing natural heritage system and plans, municipalities, Conservation Authorities, and academics should continue to identify important movement corridors at local and watershed scales by functional group and solutions at appropriate scales to improve connectivity and protect key corridors.

The federal government should form a working group to assess if and how to establish designations for important ecological corridors following the IUCN guidance, starting with municipal, Conservation Authority, and unceded (Crown) lands.

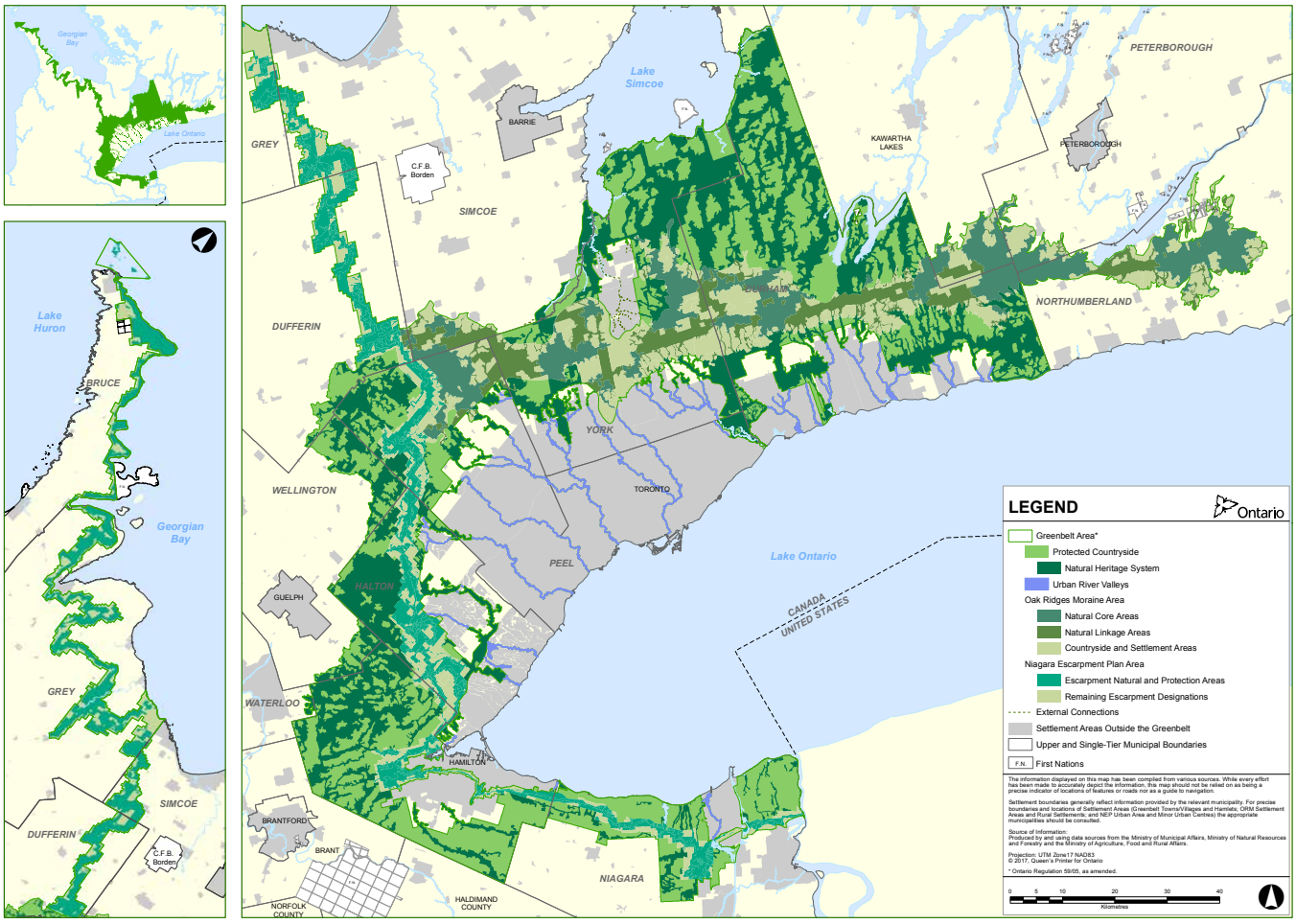
Educational institutions, Conservation Authorities, and municipalities should continue to engage with Indigenous Peoples and Communities to explore opportunities for community science, voluntary landowner programs, and coalitions to protect ecological corridors. This engagement may include outreach and support for establishing seasonal corridors across agricultural lands or forming partnerships.

5.1 Ontario's Greenbelt

Areas of high remaining connectivity in the GGH are partly protected by policies in the Greenbelt and Growth Plans. This protection could be enhanced through federal recognition and designation of ecological corridors within and beyond the Greenbelt that connect protected and conserved areas like Rouge National Urban Park to Tobermory and Queen Elizabeth II Wildlands Provincial Park. Since these areas are of federal significance and since the Greenbelt also plays a role in cross-border connectivity (both terrestrial and aquatic), any efforts to identify nationally significant areas of connectivity should include a consideration of Ontario's Greenbelt (see Figure 5.2).

Since Ontario's Greenbelt has more topographic heterogeneity (given the geological formations like the Niagara Escarpment and urban river valleys) than the surrounding region, its microhabitats create opportunities for species to move or adapt to climate change by adjusting their distributions along slopes.[127]

Figure 5.2 *The Greenbelt around the Greater Golden Horseshoe*



The CCEA's report *Implementing Connectivity Conservation in Canada* highlights the Oak Ridges Moraine in the Greenbelt as a case study. Beyond the east-west connectivity of the Oak Ridges Moraine Conservation Plan, the Niagara Escarpment provides north-south connections from the Canada–U.S. border up through the Bruce Peninsula. The Protected Countryside and urban river valley policies in the Greenbelt Plan further connect these areas to the shores of Lake Simcoe and Lake Ontario, allowing terrestrial movement around the highly urbanized area framed by Lake Ontario, Lake Erie, and Lake Huron. This connectivity is likely to become even more important with climate change.

Important connectors between the Greenbelt and Lake Ontario include Rouge National Urban Park and the lands between Cootes Paradise and the Niagara Escarpment. This second connection was explored in depth with more refined connectivity modelling, as described in section 5.2.

5.2 Cootes to Escarpment EcoPark System

The Cootes to Escarpment EcoPark System is a collaboration among government and not-for-profit agencies that collectively protects nearly 2,200 hectares of open space and nature sanctuary between Cootes Paradise Marsh, Hamilton Harbour, and the Niagara Escarpment (see Figure 5.3).

Figure 5.1 *Overall summary of priority areas for multispecies connectivity conservation in the Cootes to Escarpment EcoPark System focal area. Priority areas in this map integrate the results of generalized connectivity analysis and focal species habitat suitability and connectivity analyses.*[128]

Since 2007 the collaboration has evolved as a voluntary park alliance in which the participating agencies own and manage their lands individually but collaborate on areas of mutual interest. Participating agencies (as of March 2021) include the Bruce Trail Conservancy, the City of Burlington, Conservation Halton, Halton Region, the City of Hamilton, the Hamilton Conservation Authority, the Hamilton Naturalists' Club, McMaster University, and the Royal Botanical Gardens.

As Ontario Nature's *Best Practices Guide to Natural Heritage Systems* Planning points out, linkage areas should include connections beyond the boundaries of the planning unit (the municipality or watershed). The Cootes to Escarpment EcoPark System connects the wetlands of the Niagara Escarpment and the coastal wetlands at the western tip of Lake Ontario. Within this highly urbanized part of Halton Region and the City of Hamilton, the Cootes to Escarpment EcoPark System's nine landowning partner agencies coordinate stewardship and restoration efforts.

In support of the Near-Urban Nature Network, this alliance of local agencies undertook high-resolution connectivity mapping to understand and support biodiversity conservation and management activities in the EcoPark System by identifying habitat patches and movement corridors that promote landscape connectivity.

The analysis assessed connectivity among natural areas both within and between EcoPark System partner–owned properties and the surrounding landscape. The focal species analyses express connectivity for different scales of movement and for different habitat types within the EcoPark System. Together, these connectivity analyses paint a vivid picture of current connectivity hotspots, connectivity breaks, and conservation priorities – suggesting an integrated, broad-scale perspective to help to assess the cumulative impacts associated with many small projects on overall landscape connectivity and biodiversity conservation.

5.3 Supporting connectivity in urban and agricultural landscapes

Landscapes have varying degrees of permeability, that is the "degree to which regional landscapes, encompassing a variety of natural, semi-natural and developed land cover types, are conducive to wildlife movement and sustain ecological processes."[129] Permeability can fluctuate over time with changes to vegetation communities on agricultural lands or the removal of barriers such as fencing. It can also change during the year, as is the case in some agricultural areas which can have higher or lower permeability based on grazing or crop rotations.

Practices such as cover cropping and windbreaks, which can improve the ecological functions of agricultural lands, can also improve the climate resilience of these lands and help achieve other objectives of the provincial government, such as those outlined in Ontario's Agricultural Soil Health and Conservation Strategy.[130]

Areas outside the boundary of delineated "natural features" have traditionally been described as the "matrix" and often considered void of much ecological value. Understanding of the role of the "urban matrix" (or settlement areas) in supporting biodiversity is rapidly growing. Urban vegetation or green infrastructure can significantly improve biodiversity compared with conventional (grey) infrastructure, suggesting that the urban matrix is not a homogeneous zone and could be more supportive of biodiversity.[131]

Urban areas can benefit from terrestrial vegetation strategies, such as urban forest enhancements as well as aquatic restoration. For example, rivers that have been channelized can be restored to improve connectivity. Although ecological values are not the same in developed areas compared with those of nearby natural areas, even within urban or suburban developed areas, opportunities remain to improve permeability and ecological functions.

Table 5.1 *Summary of approaches and examples of projects that can improve connectivity in the GGH*

Approach	Details	Example
Retain and manage existing connectivity	Establish designations for important ecological corridors following IUCN guidance, starting with unceded (Crown), municipal, and Conservation Authority lands	The Big Chute Rocklands, Matchedash Crown Land, and Matchedash Lake ANSIs which fall within the Matchedash Wildlands, on unceded (Crown) land, are an important wildlife corridor stretching from just east of the southern tip of Georgian Bay to Swift Rapids, north of Orillia. Comprising pine and oak forests, granite barrens, wetlands, lakes and small rivers, the wildlands harbour rare plant communities (Atlantic coastal plain flora) and several species at risk, including Massasauga rattlesnake, Blanding's turtle, five-lined skink, lake sturgeon, and wood thrush.
Engage and coordinate with landowners and stewards	Explore opportunities for voluntary landowner programs and coalitions that help protect ecological corridors. This can include outreach and support for establishing seasonal corridors across agricultural lands or forming partnerships.	The Cootes to Escarpment EcoPark System seeks to inspire, support, and recognize landowners interested in restoration and stewardship efforts on their property through partner-led initiatives like Conservation Halton's "Design Your Native Landscape Workshops," the Bruce Trail Conservancy's Landowner Outreach, and "In the Zone"
Restore connectivity and improve permeability in urban and agricultural areas	Restore connections through habitat restoration efforts and enhance the ecological role of urban and agricultural lands. This is already done to varying extents by municipal, Conservation Authority, and not-for-profit restoration programs.	The Meadoway project by the Toronto and Region Conservation Authority is an urban restoration project that will provide social benefits and could improve habitat for pollinators through native plant restoration by transforming a hydro corridor in Scarborough into a 16-kilometre stretch of urban greenspace and meadowlands. Dufferin County's Living Snow Fence Program is an example of a program that can help support connectivity on agricultural lands while also meeting community objectives of improving road visibility.
Mitigate impacts	During all linear infrastructure projects, explore opportunities to include mitigation measures like effective wildlife crossings or directional fencing that blocks wildlife from hazards like roads and directs them toward safe passage.	Toronto and Region Conservation Authority's Crossings Guideline for Valley and Stream Corridors
Temporal connectivity	Landscapes, especially intensively managed ones, can be more or less permeable to species at different times. Depending on lifecycles and migration behaviours, many species move more or are more sensitive during certain periods of the year. By taking these species-specific dynamics into account, conservation organizations can improve connectivity at the local level by temporarily supporting functional connectivity through land use practices. Efforts that support temporary connectivity can be helpful in supporting populations of at-risk species while larger collaborative conservation planning is undertaken.	Ontario Soil and Crop Improvement Association operates programs for species at risk on agricultural lands with Environment and Climate Change Canada and Ontario Ministry of Environment, Conservation and Parks. The Grassland Stewardship Program and Badger Way include best management practices that support species at risk in certain critical time windows, for example leaving ungrazed areas until mid July as grassland bird refuges. The City of Burlington, in partnership with Conservation Halton, identified and temporarily closes an important road crossing for the endangered Jefferson Salamander. York Region, in partnership with Toronto and Region Conservation started doing the same in 2021.
Research and monitoring	Research efforts to understand the impact of roads and other barriers are critically important to inform the priorities and opportunities for restoration and mitigation efforts community science to build eco-literacy.	Collaborative groups working on applied research like the Ontario Road Ecology Group (OREG) and Eco-Kare.

RECOMMENDATIONS

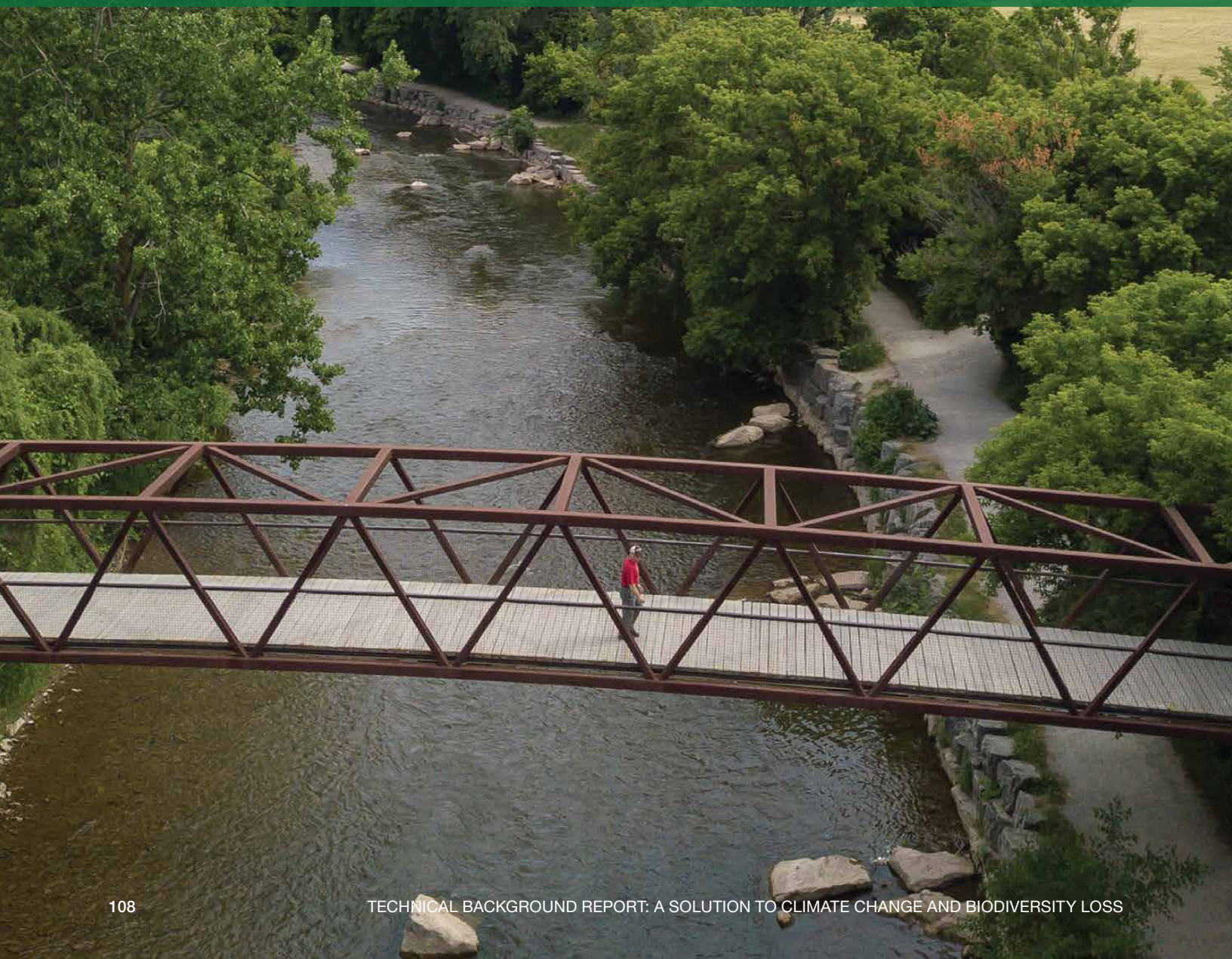
Provincial agricultural programs and municipalities should focus on improving permeability and connectivity of all land uses (i.e., not just existing natural heritage system boundaries) by increasing the wildlife and ecosystem service considerations across the landscape, including greater consideration for connectivity, management timing, and the increased presence of native plants. Examples include bird-friendly pasture management, identifying and protecting corridors (including temporary corridors) with landowners, soil health practices, and diversified tree plantings.

Municipalities, infrastructure companies, and other agencies installing infrastructure should mitigate impacts to the greatest extent possible and aim for an increase in ecological connectivity as road, rail, or hydro corridors are maintained or updated; this may include the creation of wildlife crossings or the use of directional fencing.

All responsible governments should partner with Conservation Authorities and academics to undertake research to understand the impact of roads and other barriers on ecological connectivity to inform the priorities and opportunities for restoration and mitigation efforts.

Conservation organizations should build eco-literacy and “nature watch” networks and neighbourhoods with community science.

6. Restoration for habitat, natural infrastructure, and climate resilience



2021

The start of the United Nations Decade on Ecosystem Restoration

Given the historic losses of habitat and connectivity and the increasing need for more natural cover in the GGH to counter the impacts of urbanization and climate change, restoration will also be necessary to maintain and restore important habitat for biodiversity, connectivity, and cultural/social significance and climate resilience.

As recommended in CCEA's *Implementing Connectivity Conservation in Canada* (2021), in a case study on the Oak Ridges Moraine, there is a need for coordination "with all relevant partners to establish restoration plans with annual targets and funding envelopes." For example, a 2014 environmental report card for the Moraine and adjacent Greenbelt lands identified restoration priorities which informed the "Positively Green" program of the Greenbelt Golden Horseshoe Conservation Authority Collaborative.[132]

Restoration efforts should be guided by community priorities related to the ecological, cultural, social, and climate resilience benefits that near-urban nature can provide. The Society for Ecological Restoration has outlined Principles and Standards for the Practice of Ecological Restoration (see text box).

The Society for Ecological Restoration's Principles and Standards for the Practice of Ecological Restoration:

1. Engages stakeholders
2. Draws on many types of knowledge
3. Is informed by native reference ecosystems while considering environmental change
4. Supports ecosystem recovery processes
5. Is assessed against clear goals and targets using measurable indicators
6. Seeks the highest level of recovery possible
7. Gains cumulative value when applied at large scales
8. Is part of a continuum of restorative activities[133]

Many Conservation Authorities in the GGH have protocols, strategies, and tools to identify priorities for restoration, primarily for natural heritage or water quantity (flood attenuation, stormwater management). These tools and methods could include considerations of the regional Near-Urban Nature Network. For example, restoring lands near existing protected and conserved areas and considering cultural values with Indigenous Communities could set the stage for future contributions to Canada's Target 1.

Additional social benefits such as access to green space could be incorporated as well. Information and tools to guide restoration were identified as a benefit of a regional-scale Near-Urban Nature Network. Conservation Authority staff expressed that additional evidence at regional scales to guide restoration efforts would be welcomed, especially if it could be adapted and built on at local municipal and watershed scales. For example, clear, regional-scale plans to coordinate efforts to map and contain invasive species, for instance, would be a welcome benefit.

6.1 Rare habitats

Many habitat types in the GGH that had nearly disappeared from the landscape are slowly being restored. These include coastal wetlands, grasslands, and urban river valleys. These ecosystems provide unique habitat, play a role in climate resilience, and provide important cultural benefits.

Trends in Rare Habitats

Native prairie grassland ecosystems have undergone the most extensive modification of any of Canada's major ecosystems, mostly through ongoing conversion to agricultural land; 97 per cent of savannah habitat in Southern Ontario has been lost to date.[134]

The *State of the Great Lakes 2019* report states that coastal wetland habitat in Lake Ontario is improving, but also specifies the negative impacts of urbanization in the GGH: "Across the entire [Great Lakes] basin, there is a trend of increasing development, resulting in a loss of agricultural, forested and other natural lands."[135]

One action to improve the resilience and quality of the Great Lakes ecosystems is to protect and restore coastal wetlands, most of which have been destroyed along the shores of Lake Ontario.[136]

Restoration projects like the Port Lands in Toronto and Cootes Paradise in Hamilton have been supported by multiple levels of governments, local communities, and other organizations. Restored wetlands can add to protected areas for ecological and cultural benefits. For example, Colonel Samuel Smith Park, owned by the Toronto and Region Conservation Authority and managed by the City of Toronto, was created primarily for recreation and features coastal meadow and wetland communities along Lake Ontario.

Credit Valley Conservation Authority has been restoring grassland in the Upper Credit Conservation Area and nearby private lands. This work involves removing invasive species and replacing them with native prairie plants.

Another example is the work conducted by Alderville First Nation in the Alderville Black Oak Savannah near Rice Lake, the largest intact tract of native grassland in Central Ontario. This landscape reflects a restoration of Indigenous knowledge and cultural practice in burning areas to maintain these grasslands, a practice long suppressed by European settlers, who essentially eradicated these habitats. With support of Alderville First Nation, this site has been protected from development and restored over the last two decades. This site is now an important source of native plant seed for other tallgrass prairie and black oak savannah restorations in the GGH.[137] The Alderville Black Oak Savannah is an Indigenous-led effort to protect and restore rare habitats that has provided many community benefits, including opportunities for land-based learning, ecotourism, and a new native plant nursery.

In addition to biodiversity, restoration projects can help reduce flood risk and provide much-needed green space. Projects along urban river valleys that flow into the Great Lakes offer similar benefits. Brampton's Riverwalk is a good example of a federally funded project to reduce flood risk, improve water quality, and provide public access to nature's benefits. Key to optimizing the biodiversity benefits of these projects is that native plants be incorporated throughout these restorations, to support native pollinators and wildlife.

6.2 Forest restoration and afforestation

Environment Canada recommends a minimum of 30 per cent forest cover at the watershed scale, while highly recommending 40 to 50 per cent support ecological integrity of terrestrial and aquatic systems and enhance species richness and ecosystem services.[138] The federal government has committed to planting two billion trees over the next 10 years to address climate change and has announced $3.16 billion for this initiative.[139]

Nowhere are these trees needed more than in the GGH, where they could support the highest co-benefits for biodiversity, human well-being, and climate resilience objectives and where the largest number of Canadians will benefit.

An ecosystem restoration approach is highly recommended for implementation of the two billion trees initiative. Afforestation efforts without proper consideration of biodiversity impacts can have negative impacts.[140] For example, in certain areas of the GGH, afforestation and succession has reduced the amount of meadow habitats associated with species at risk.[141]

To reach 30 per cent forest cover in the Greater Golden Horseshoe, about 54,000 hectares (2 per cent of the land) would need to be planted (based on our analysis of 2016 SOLRIS land cover data from the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry). At a low planting density of 1,000 trees per hectare, this represents 54 million trees.

There is plenty of room for these trees in this region. More than 850,000 hectares (or 27 per cent) of the land in the GGH is not tilled, forest, wetland, rare habitat, or urban. In fact, there is enough unforested green space within urban areas alone to fit in all 54 million trees. Moreover, the existing 28 per cent forest cover is not equally distributed across the landscape. Some watersheds should be aiming to restore even more land.

Ecosystem Services of 54,000 Hectares of Forest

Average value of annual ecosystem services provided by forests in the Greenbelt:

$14,998.33/ha in 2018 dollars[142] x 54,000 hectares of new forest in the Greater Golden Horseshoe = more than $809.9 million/year in tangible values from these future forests

$809.9 million a year is a conservative estimate of the economic value provided by forests from services such as aesthetics, greenhouse gas regulation, habitat refuge (partial), pollution and waste regulation, pollination and dispersal, recreation, and water supply regulation. These values do not capture the many health benefits known to be extremely valuable in peri-urban areas such as the cooling benefit of forests near communities, nor do they capture the intangible and invaluable cultural, social, ecological, and spiritual benefits forests provide in near-urban areas.

Afforestation on the scale of 54 million trees over 10 years (5.4 million a year) is far larger than any recent initiatives. Forests Ontario, the largest afforestation organization in Ontario, plants about 3 million trees annually.[143] Reaching 5.4 million a year will require long-term financial commitments to encourage capacity development by participating organizations and may not be feasible within the two billion trees program window of 2030. Nevertheless, the benefits that these trees would provide to the millions of people living in this region means efforts to get the right tree in the right place for the right reason are worth pursuing.

Mississauga and Brampton have each set a goal of a million trees planted. Given the 110 municipalities in the GGH, 54 million trees appears to be a reasonable collective target that could have local support.

We can look to the past for examples of intensive tree planting efforts in Ontario. In the 1930s, the provincial government was providing 7 million seedlings to farmers and other land stewards in southern Ontario.[144] From the 1970s to the 1990s, Ontario's Ministry of Northern Development, Mines, Natural Resources and Forestry was growing between 20 and 30 million seedlings for private lands.[145]

Opportunities for afforestation range from dense urban areas to agricultural lands and existing forests that would benefit from restoration activities such as filling in gaps and establishing understory layers by planting under the existing forest canopy. Many successful programs already support increased afforestation and tree planting efforts. Working with local governments, Conservation Authorities, and NGOs to build capacity will be key to success. A focus on native plants and Indigenous leadership in these efforts will bring multiple cultural, social, and economic benefits.

Restoration in urban areas

Although there is less natural cover in urban areas, local efforts to restore areas even within the densest cities in the GGH are under way. Municipalities may restore lands for the natural infrastructure services they provide (such as flood control and cooling), while providing recreational natural areas. These efforts have drawn support from many levels of government, communities, and organizations. For example, the provincial Trillium Park on the shores of Lake Ontario in the densest part of the GGH, includes naturalized areas with native plants.

Tending and managing new trees is also critical to achieving increased forest cover. Forest stewardship should be supported, including education, protection, restoration, and afforestation. Afforestation/reforestation efforts should centre Indigenous cultural uses and values of forests, including important cultural species.

RECOMMENDATIONS

All governments, Conservation Authorities, conservation, and afforestation organizations should Coordinate efforts toward achieving a target of at least 30% forest cover in the region by planting at least 54 million more native trees to achieve 30% forest cover in the GGH. This requires building capacity to grow more native trees locally, identify priority areas for restoration in a participatory process, with outreach to and engagement of landowners.

6.3 Increasing the supply of native plants

Native plants have evolved in place along with animal species over centuries and are fundamental to the health of an ecosystem. In general terms, the native plants of the GGH are defined as plants that were here before European contact. As the relentless pace of colonization diminished their abundance across the landscape, the GGH has lost many native species.

Governments at all levels recognize that nature-based solutions to climate change and the biodiversity crisis are a priority, and that native plants underpin these solutions. It is time to seize the momentum of rising awareness and demand for native plants from local governments, Conservation Authorities, and individuals. This surge in demand opens space for business and investment opportunities that support local green economic development in the GGH. The current supply chain must be strengthened to meet this demand. Investment to build this capacity will leverage strategic collaboration among diverse Indigenous and non-Indigenous partners and businesses that support healthy landscapes with native plants.

Scaling up the supply of locally sourced native plants needs the full commitment of any group invested in nature-based solutions and climate action – it builds climate resilience, promotes biodiversity, regenerates soil, sequesters carbon, and supports a green economy. This case study examines the current challenges, the "accelerators" igniting market growth, and the strategies to leverage investment opportunities to stimulate the native plant economy to meet healthy landscape goals.

Indigenous partners have shared the critical need to take a holistic and integrated approach to this work. Ensuring that the strategy is Indigenous-led and supports the reconciliation of peoples and ecosystems is the only way to ensure successes are lasting and sustainable. All our recommendations respect the knowledge and experiences shared by the many Indigenous Peoples and Community representatives consulted through Carolinian Canada's work.

Demand is increasing for locally produced native plants across three markets in the GGH:

- A bulk market for high-quality green infrastructure
- A retail market for eco-landscaping
- A speciality market for biodiversity initiatives

This case study looks at the broad connections between these markets (defined as "the native plant economy") and informs discussion about the value and impact of the commercial native plant industry in the conservation and propagation of locally-sourced and -grown plants. It addresses the following themes:

- Current scope of horticultural and restoration industries, capacity of native plant nurseries, market and social trends
- Barriers to the growth of the native plant economy
- Strategic opportunities for expanding the native plant industry
- Synergies between the native plant industry and government priorities

6.3.1 The native plant economy survey

This section contains a subset of the findings from the *Native Plant Economy Survey 2021*, presented in more detail in the full report in development by Carolinian Canada.

The survey of 54 plant growers and customers launched in early February 2021 and covered native plant industry capacity, production, challenges, trends, and opportunities through 56 questions. The main objective was to inform our understanding of the native plant economy independently of the mainstream horticultural industry. The findings add to those of surveys recently conducted by the Ontario Plant Restoration Alliance (OPRA),[146] which shared some of its own questions.

Most respondents (70 per cent) are required to use native plants in their work and 85 per cent follow voluntary standards and policies related to sourcing native plants and seed. There is significant support (78 per cent) for recognizable standards for native plants and seeds related to genetic diversity and provenance, seed viability, and quality.

The demand for native plants is increasing

"Native plants are gaining in popularity, so there will be more and more demand in the future. We should make it easy for people to be able to buy a variety of native plants at a reasonable cost-comparable to non-native stock." (Survey participant)

The demand for native plants means an opportunity for growers to expand. While Statistics Canada does not track this trend in horticultural data, it was reported consistently by all stakeholders in the native plant supply chain and reflected in the survey results: more than half of the 54 participants cannot meet the current demand for native plants and seeds in their work.

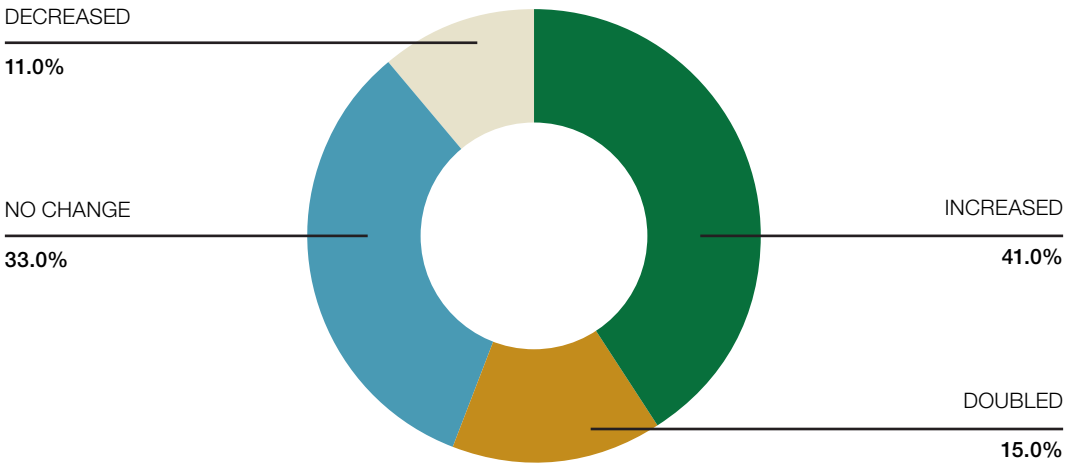
The increased interest in native plants is part of a "green recovery" noted by all participants, but addressing unsynchronized supply and demand is key to sustainable growth. Without data-driven forecasting, many native plant growers are forced to operate under the "guess-and-grow" model of business planning, as one participant put it.

Fully 94 per cent of survey participants agree that the native plant industry should expand its production capacity. At the same time, survey participants identified major challenges impacting this growth, including:

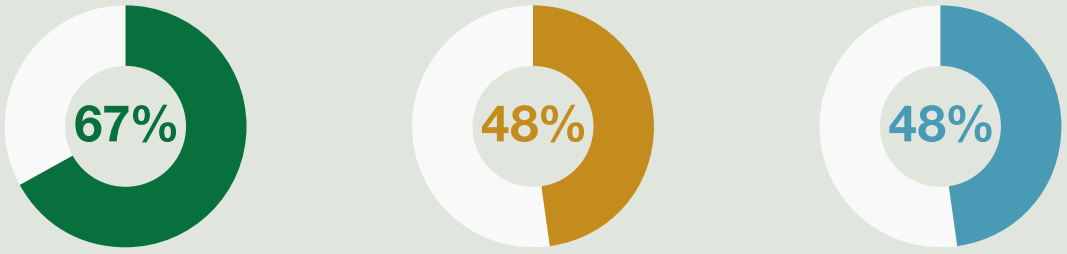
- lack of seed supply
- inconsistency and uncertainty of demand that result in supply shortages
- lack of coordination in the production of the right species and formats at the appropriate time to reduce wasting seed and potted plant material
- accelerated demand from multiple sources with little lead time
- lack of risk management
- unsynchronized timelines for funding and planting windows
- diverse demands and needs of clients, such as contract restrictions
- competition with non-native plants on the market and low-cost, low-quality options
- need for education on appropriate species for different projects
- constraints on expansion in the GGH due to low numbers of native plant suppliers and challenges for growth due to land costs in the region

Fifty-six per cent of all survey respondents reported an increase in native plant activity (production, use, or distribution) over the last three years, with 15 per cent doubling their activity. However, 33 per cent saw no change in their activity and 11 per cent saw their activity decrease. These trends reflect the effects of increased consumer demand, business strategies, capacity, and the global pandemic of 2020–21 (see Figure 6.1).

Figure 6.1 *Trends in native plant activity (production, use, distribution), 2018–20*



Top three trends driving demand for native seeds and plants



Consumer awareness and education

NGO-led community-level programs

Ecological restoration by large landowners

The factors supporting growth are:

- increased demand
- natural business and/or program growth
- meeting biodiversity goals
- new business strategy

At the same time, the factors contributing to decrease in activity are:

- lack of funding
- budget restrictions
- inability to source enough seed

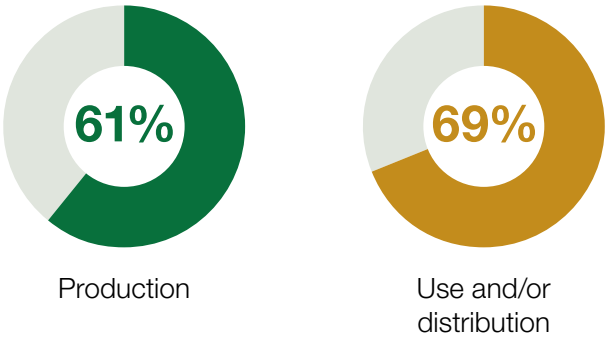
Gardeners across the GGH can be a powerful force for change in the native plant market. If one million gardeners in the GGH buy 20 native plants a year for the next five years, they could shift at least 30 per cent of the market from non-native outdoor plants to native plants. With about 52 per cent of Ontario's population engaged in gardening or landscape activities,[147] and an increase in engagement through NGO-led community-level programs, the goal of getting 25 per cent of gardeners to buy more native plants over a five-year period is a compelling call to action.

The program launched by Carolinian Canada and WWF Canada in 2017, *In the Zone: Gardens that Help Native Species Thrive*, demonstrates this impact. Over the last four years, more than 219,000 native plants have been added to gardens throughout southern Ontario. With more than 4,000 registered properties, this means an average of 54 plants per property. Furthermore, 94 per cent of participants report they intend to grow more native plants, and that they spend 41 per cent of their annual garden budget on native plants.

Overall, 71 per cent of participants in the survey plan to increase their work with native plants over the next three years by an average of 66 per cent. Of these, 28 per cent are increasing between 100 and 300 per cent and 72 per cent between 5 per cent and 50 per cent.

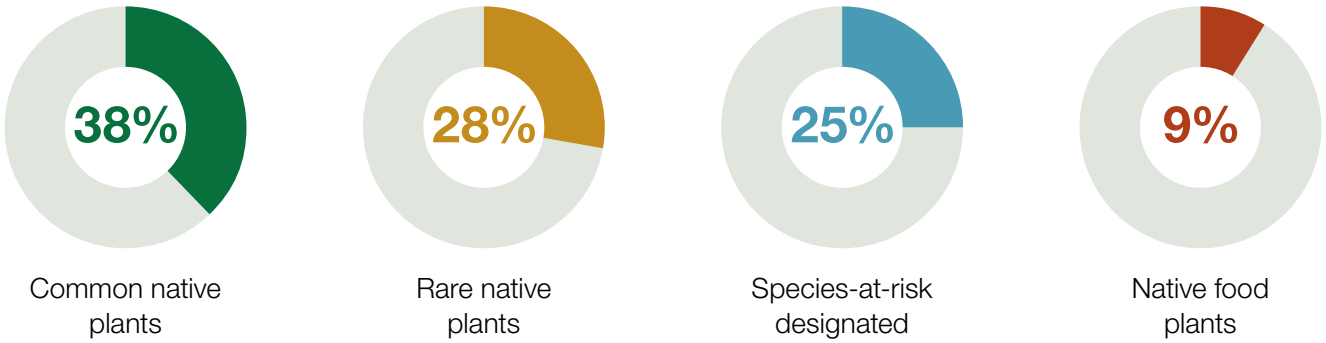
When analyzed by activity, the projected increase in use and/or distribution is 8 per cent higher than that of production.

Figure 6.2 *Projected increase by activity in work with native plants over the next 3 years*



Eighty-one per cent of growers would like to increase the specific species and/or quantities they are growing on a contract basis with sufficient lead time of one to four years.

Figure 6.3 *Projected increase by activity in work with native plants over the next 3 years*



> "The number-one challenge is trying to predict what will be in high demand in future seasons. Since it fluctuates and changes every year, it would be very helpful if growers could be included in conversations surrounding future planting plans, estimated quantities, estimated species." (Survey participant)

Interestingly, the global pandemic both increased and decreased activity. Lockdown restrictions inspired more people to start gardening or do more gardening, increasing demand. At the same time, lockdowns limited the capacity of some organizations to conduct business as usual.

> "COVID has disrupted my infrastructure work, but once the pandemic is over, I will complete that work. Next year I should be in a better position." (Survey participant)

The survey also asked about strategies to overcome the barriers to growth, use, and distribution of native plants. The results are shown in Table 6.1.

Table 6.1 *Strategies for overcoming barriers to growth in production, use and/or distribution of native plants and seeds over the next three years*

Strategy	All	Supply	Demand
Longer-term contracts that include predictable quantities of identified native plant species	48%	88%	32%
More land or greenhouse space to accommodate greater inventory	19%	31%	13%
Grants to support capacity-building and business growth	44%	50%	42%
Long-term financial investment to support the growth of the industry	44%	50%	42%
Reliable access to greater quantities and diversity of native seed	44%	50%	39%
Increased marketing for the industry as a whole	43%	69%	32%
Access to marketing expertise or platforms	17%	31%	1%
Access to business expertise or consultants	19%	25%	16%
Access to ecological expertise	13%	13%	13%
Organizational policy that prioritizes native plants and/or seeds	41%	38%	42%
Industry-wide seed strategy and source tracking system	37%	44%	34%
Better industry data to make business decisions	17%	25%	13%

Source: Native Plant Economy Survey 2021

6.3.2 A strategy to produce locally sourced seed for growing native plants

Seed is the stage of a plant's life cycle where human intervention can have the greatest impact towards generating more plants and therefore more habitat.

Most plants have tremendous reproductive capacity. Because they cannot move, they must produce enough seeds to increase the odds that at least one will become established in a favourable location. Most seed-bearing plants (this excludes mosses and ferns) have been optimized over roughly 200 million years of natural selection to produce as many seeds as possible, because only a small percentage will survive in nature.

"Large-scale restoration in Ontario over the next decade will require seed in huge volumes – hundreds of kilograms at least – a countless number of seeds. This will require strategic scaling of seed resources, that is, farming of local native plants as aggressively as we currently farm corn, soy, canola, wheat, and other seed crops."

STEFAN WEBER, ONTARIO PLANT RESTORATION ALLIANCE

A seed strategy can increase ecologically appropriate plants for habitat creation, while supporting local growers. It can also address specific plant or wildlife species conservation goals, support climate adaptation, and reduce ecological restoration costs over time. Seed conservation orchards for some species could be scaled up to produce bulk wildflower and grass seed for large restoration projects.

As demand increases, the need for a consistent and plentiful supply of a diversity of locally sourced and ethically collected seed ranks as an urgent priority. A lack of seed is affecting our ability to scale activity effectively – insufficient locally sourced supply forces buyers to purchase outside their seed zone or rely on imports – and to produce the spectrum of native plants that would have historically been found on a healthy landscape.

Canada needs a Seed Strategy to support conservation goals across the country. The United States has a good model that could be looked to, the National Seed Strategy for Rehabilitation and Restoration 2015–2020, which was developed to "provide a more coordinated approach for stabilization, rehabilitation and restoration treatments. It provides a framework for actively working with the private sector in order to build a 'seed industry' for rehabilitation and restoration… This Strategy recognizes the importance of healthy native plant communities as an essential foundation for ecosystem integrity and diversity. Healthy native plant communities create habitat for animals; provide ecosystem services that sustain people, their communities, and their economies; and have intrinsic and irreplaceable biotic value that will become increasingly important in the future." National Seed Strategy for Rehabilitation and Restoration 2015–2020

The development of an inclusive and collaborative seed conservation strategy will engage native plant growers, Indigenous Communities, farmers, municipalities, conservation biologists, public and private landowners, NGOs and community groups, landscape architects and designers, land-use planners, gardeners, community scientists, and more in creating a long-term sustainable system to grow plants for a healthy resilient landscape. The collection and exchange of native seeds has been supported over the years by botanists, ecologists, foresters, gardeners, organizations such as North American Native Plant Society, and through seed exchange and promotion events such as Seedy Saturdays.

The survey found considerable support for a seed strategy:

- 76 per cent of respondents agree that Ontario needs a native seed strategy that supports the native plant industry to provide the native seeds and plants needed to meet market demand.
- 63 per cent agreed that access to a greater diversity of local native seed will directly improve their production, use and/or distribution for current and future projects.

A seed strategy would focus on a broader diversity of native species, including herbaceous perennials and native grasses. The potential for growth in this sector is high for the recognized benefits they provide wildlife and people, and as species worthy of conservation. A few strategies are emerging at the local level in response to the growing demand for native plants, but without an overall seed strategy, this growth runs the risk of being inconsistent, confusing for growers and end-users alike, and detrimental to the species needing protection.

From the growers' perspective, a seed strategy will:

- introduce new genetic material into seed orchards to ensure viable future stock
- reduce cost, time, and effort to source, collect, and store seed
- ensure access to marketable species with the advantage of being locally sourced
- ensure access to wider range of species, including rarer varieties
- enable organizations to meet their restoration goals
- facilitate an increase in plantings
- improve options for in-house production
- support reliable forecasting
- connect local seed strategies to significant plant populations with high-quality seed found on conservation lands
- coordinate access to data about plant locations
- ensure availability for all projects, regardless of project timing
- support organizations to maintain diverse and healthy seed inventories
- support volunteer engagement in propagation

> "A seed strategy will support the protection and appropriate propagation of rare species. Current seed sources are inadequate to ensure their survival and more care, with longer timelines, are needed to produce healthy stock." (Survey participant)

A collaborative seed conservation strategy would provide a framework to guide this growth, set standards for seed collection and source identification, provide transparency about the availability of supply, and establish processes to build the capacity of the system to meet future demand. A seed strategy will also help to even out supply chain challenges that leave growers unable to fill orders and end users struggling to meet their planting goals.

A seed conservation strategy will over time:

- catalyze the protection of the diversity of native flora, rare species in particular, that are the foundation of a healthy functioning landscape for all
- move locally sourced native plants out of a "niche market" and into a system with proper source identification and labelling to make them accessible to everyone
- support a green economy by galvanizing investment into ecosystem restoration, delivered through local business and jobs

Wild native seed collection is a complex activity, underestimated and undervalued, from time spent in the field collecting to stratification and cultivation. This work is connected to questions of seed sovereignty, issues of increasingly limited supply in the wild (population decline and fragmentation), hybridization, and the proliferation of exotic species. Seed collection requires training. Locally sourced seed should be certified and documented to authenticate its source.

"We need greater accountability, transparency and consistency in verifying plants and seeds are native to the area in which they will be planted. Meeting the definition of 'native' ensures that the plantings will be compatible with their new environment and in essence be able to re-create natural habitats or vegetation communities that are necessary to promote environmental sustainability that support local populations of pollinators and other elements of the biotic community. Genetic diversity, provenance, seed viability and quality are all necessary to ensure we can collectively move toward producing an increasing inventory of native plants and seed quantities while protecting wild populations and biodiversity." (Survey participant)

Ontario once had a system of tree seed collection and distribution managed by the Ministry of Northern Development, Mines, Natural Resources and Forestry, operated by the tree seed plant in Angus, Ontario. Since the closure of the plant in 2018, Forests Ontario, with nursery partners, has stepped up to maintain the integrity of the system, support seed and cone collectors, and maintain a viable seed bank with millions of seeds.[148]

Native seed strategies to support local markets, programs, and restoration efforts are emerging in Ontario:

Middlesex Seed Conservation Strategy[149] – Ontario Plant Restoration Alliance (OPRA) and Carolinian Canada (2019)

This strategy estimates that one hectare of mixed prairie crops (grasses and herbaceous perennials) could produce sufficient seed for restoring four hectares every year, based on initial start-up costs of $4,780 for plugs and $6,960 in hard costs.

Kawartha-Peterborough Seed Strategy – OPRA, Forest Gene Conservation Association of Ontario (FGCA), and Kawartha Field Naturalists (2018)

Over 40 people attended a workshop to explore the benefits, challenges, and opportunities to creating a seed strategy for the Kawartha Region.

Toronto Seed Strategy – EcoMan, OPRA and other groups

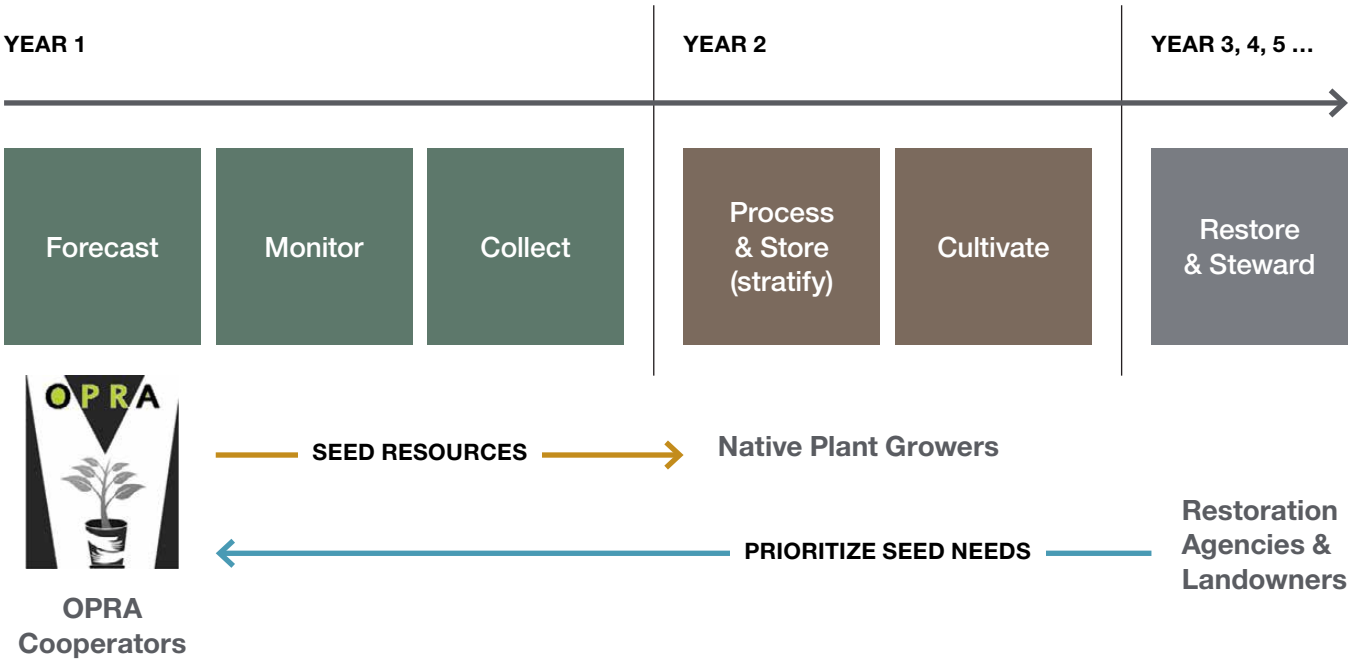
More than 40 people representing different organizations began meeting in January 2021 to scope the opportunity for a Toronto seed strategy.

In a model proposed by the Ontario Plant Restoration Alliance (see Figure 6.4), seed forecasting, monitoring, and collection are coordinated with input from end users (restoration agencies, landowners, and other partners), with costs borne through a separate investment model that qualifies this phase of the process as a "social/environment good" – as an investment in ecosystem services.

The role of the growers shifts to processing and cultivation to supply end users. As part of the cultivation stage, bulk seed for grassland creation can be scaled up using traditional horticultural practices in perennial seed orchards. Local native seed suppliers represent a type of regional seed strategy in this way.

For more information on native plants, see Appendix E.

Figure 6.4 *Seed Strategy Model, Ontario Plant Restoration Alliance (OPRA)*



RECOMMENDATIONS

Support healthy landscapes and the native plant economy by involving more landowners in seed sourcing, growing, and stewarding native plants.

Develop a southern Ontario resilient seed strategy as a pilot for a National strategy that integrates and aligns diverse efforts across the region, supports many goals (e.g., seed sovereignty, genetic diversity, climate adaptation), and provides practical guidelines and tracking tools for all native plants. As part of this strategy

- Establish knowledge networks for native plants, including seed conservation orchards, collaborative voluntary standards and labelling, guidelines, and forecasting to support GGH-wide planting targets
- Connect supply and demand of seeds and plants and track seed sources
- Expand training and certification programs that focus on the propagation of native species as well as build job skills and sector capacity for all aspects of native plants.

7. Opportunities for voluntary measures

One of the largest barriers to coordinated action for biodiversity at a regional scale is the fragmented land ownership. Fortunately, municipalities, Conservation Authorities, private landowners, Indigenous Peoples and Communities responsible for managing much of the Near-Urban Nature Network participate in many stewardship activities voluntarily – that is, they undertake stewardship activities they are not required to do by regulation. Voluntary measures include conservation planning, restoration activities, and agreements to protect and conserve land. Many long-standing Voluntary Conservation Measures (VCMs) are managed and funded by a combination of federal, provincial, or municipal governments, Conservation Authorities, and conservation organizations.

VCM programs and initiatives provide education, apply consistent approaches, and coordinate the individual actions of multiple landowners for ecological, social, cultural, and climate resilience benefits. Many programs and incentives are meant for private lands, but can also apply to local governments and Conservation Authority lands. For example, many Conservation Authorities pay municipal tax on their lands and could be motivated to participate in certain programs through tax incentives.

The success of VCM programs largely depends on the development of programming that meets the specific geographical contexts, needs, values, and capabilities of local landowners.[150]

In landscapes with fragmented ownership and jurisdictions, VCM programs can encourage land stewardship across small parcels of land with consistent and regional-scale objectives. These programs can be particularly helpful where there is little political desire or capacity to enforce regulatory approaches.

Most stewards identified their main reasons for participating in VCM were "caring for the land" and increasing or preserving biodiversity. None of the survey respondents said they participated primarily to increase production or for public perception, suggesting those surveyed are not driven by financial motivations, even if costs are seen to be a barrier in participating.

"Landowners are volunteering their land to support a societal benefit, so providing tax benefits to encourage restoration and stewardship is a good start."

ROB KEEN, FORESTS ONTARIO

Those who work closely with land stewards noted that acknowledging the actions of those stewards through awards, certification, or other incentives helps keep people on board and expand networks as participants convince others to join them.

The need for new approaches to land conservation of near-urban lands has been acknowledged in academic literature.[151] Proposed strategies are, however, less common.[152] VCMs can offer strategies for ecological enhancement in formal or informal programs on a voluntary basis that increases awareness and adoption of land stewardship practices that promote habitat protection, conservation, and restoration.

Protecting farmland for future generations

Farmland is habitat for pollinators and other wildlife. It presents less of a barrier for wildlife species moving across the landscape, because agricultural lands tend to have fewer roads and less heat and noise than suburban developments.

Ontario's Greenbelt protects the farmland within it. Outside the Greenbelt, farmland is lost at an alarming rate. Farmland easement agreements can help reverse this trend by permanently protecting farmland without affecting land ownership. These agreements, enabled by the province and administered by Ontario Farmland Trust, are tailored to each farmland property and "run with the land" so that future generations can benefit.

Farmland easement agreements bring tax benefits. Properties with significant natural features such as wetland and forests could qualify for even larger benefits through Environment and Climate Change Canada's Ecological Gifts Program.

Protecting farmland also protects an important economic sector in the GGH. Farmland in this region contributes $11 billion and 38,000 jobs to Ontario's economy.[153] By planting, tending, and maintaining ecological buffer strips, windrows, and wetlands on marginal or wet areas of their land, farmers steward the land and also benefit from enhanced soil health by retaining moisture and reducing erosion.

In our survey of land stewards in Ontario – including farmers, Conservation Authority staff, and private landowners – participants identified the top barriers to assessing properties to meet voluntary measures for protected areas as:

- financial (43 per cent)
- administrative (37 per cent)
- unclear, complicated, or time-consuming processes (37 per cent)
- lack of municipal or government support (29 per cent)

Face-to-face interactions were identified as extremely valuable for outreach. Outreach should include knowledge exchange and education on the history of the Indigenous Peoples and the importance of including Indigenous knowledge systems.

7.1 Outreach and commitment

Understanding the motivations of individuals and organizations participating in VCMs can help shape effective outreach campaigns that increase the participation and effectiveness of VCMs. Documented motivations for joining a VCM and effective participation include[154]:

- **Conservation values**, whereby enrolment is an action taken from a desire to conserve the land for its ecological, cultural, or other values. Individuals may be motivated by the opportunity to take action on climate resilience or biodiversity. Organizations such as municipalities could be motivated by alignment with existing policies and priorities like sustainable development.
- **Place attachment**, that is, a strong emotional relationship to the land.
- **Social learning**, where being part of a larger conservation movement represents a desire to learn. This is the strongest link to landowner satisfaction, which correlated to program commitment. This motivation is relevant to both private and public land stewards.

Outreach can involve various forms of communication and stakeholder engagement, such as educational programs, personal contacts, and informational mailings.[155]

Research has demonstrated the vital role of outreach for influencing private landowners to sustain conservation behaviours through time. Landowners with access to information and familiarity with the VCM program staff are more likely to implement best management practices on their properties.[156] Fostering relationships among program staff and one-on-one visits can also encourage landowners to participate in VCMs.[157] For landowners who are already actively involved in VCMs, regular communication with program staff can positively influence landowner satisfaction, continued conservation efforts, and retention in the program.[158]

Potential elements that could improve uptake of VCMS:

- access to educational and capacity-building programs
- landowner networks (facilitating knowledge exchange)
- technical assistance from interdisciplinary teams to inform land management challenges
- cost-sharing incentives to assist with the deployment of conservation actions
- integrating multiple knowledge systems[159]

7.2 Economic and social incentives

Incentives, including financial and social benefits, can make participation in VCMs more appealing. Participation in VCMs often takes time and effort, and even with strong motivation for participating, some individuals or groups need social or financial incentives to muster the effort required to participate.

Emphasis should be put on programs that strengthen the existing links between people and nature, while addressing the diverse needs of landowners for greater social and conservation benefits.[160]

While financial incentives can offer landowners economic support to cover portions of the costs associated with implementing conservation actions on their lands,[161] programs that rely too heavily on financial incentives may marginalize other motivations driving participation in voluntary conservation and may increase a program's dependency on external financial sources.[162]

Five strategies to incentivize participation in VCMs are described here with examples.[163]

7.2.1 Indirect incentives

Municipally administered policies can incentivize landowners to protect habitat and may also encourage the enhancement, restoration, or creation of habitat. These outcomes are achieved by providing landowners with indirect incentives, such as tax reduction, fee credits, or development rights. The administering municipality may also require landowners and developers to enter into a conservation agreement to clearly define the commitment. These programs may also offer technical or implementation assistance and may require landowners to perform monitoring and reporting to ensure continued compliance.

Many municipalities in the GGH work closely with Conservation Authorities to administer these programs. Additionally, Conservation Authorities may use these programs to reduce their own land tax or to obtain approval to build facilities within a municipality that impact natural features, in a manner similar to agreements for tax exceptions where municipal facilities (such as trails or buildings) are on Conservation Authority lands.

Some programs and incentives related to development rights involve the destruction of some habitat with the requirement to compensate for that loss elsewhere. These incentives often aim for "no net loss" and therefore may not result in a "gain" for conservation. Furthermore, while these protocols and programs apply a consistent approach and reduce habitat loss, several concerns associated with these approaches have been documented.[164] These include risks related to monitoring the implementation of offsets over the long-term and having the necessary information and knowledge to determine if newly restored areas are "equivalent" in ecological and social function. Some Conservation Authorities in the GGH have established protocols for guiding these decisions. They tend to be driven by natural heritage system policies and therefore have a greater focus on compensating the ecological and hydrological roles of systems than on social or cultural values.

One constraint on greater participation in these programs is that the application process can be cumbersome and may differ from program to program. Landowners may have areas eligible for one or more of these programs and streamlining the process and keeping costs down could increase uptake. Indigenous land trusts and practices should qualify for these programs.

Examples of indirect incentives in the GGH:

- Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry Conservation Land Tax Incentive Program and the Managed Forest Tax Incentive Program
- Environment and Climate Change Canada's Ecological Gifts Program
- Environmental Farm Plan

Conservation Land Tax Incentive Program

The Conservation Land Tax Incentive Program recognizes, encourages, and supports the long-term private stewardship of Ontario's provincially important natural areas. Under the program, portions of a property that have eligible natural heritage features may qualify for a 100 per cent property tax exemption.

Very specific natural heritage features are eligible. These are identified by the province, but a landowner can make a case for the inclusion of a specific feature in the program.

This program is essential to support conservation of ecologically sensitive areas, particularly in areas with high property taxes. It is essential for environmental charities that could not, in many cases, hold the conservation lands in question if the full local rates of property taxes were applied to the property. It is also relevant for southern Ontario cottage country and lakeshore properties, where property taxes are high.

The program has drawbacks: it is limited to specific features, and faces challenges in administration. Municipalities lose property tax monies when new properties join this provincial program. Administrative and staff costs are incurred to ensure all eligible properties are included in the program.

Managed Forest Tax Incentive Program (MFTIP)

The MFTIP program provides tax relief (75 per cent) to forest owners who write a forest management plan approved by a MFTIP plan approver and carry out the promised management activities. This program is administered by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry.

MFTIP plans can be at almost any level of detail, but they must maintain forest cover and comply with good forestry practices if harvesting is carried out (such as tree marking by certified tree marker or Registered Professional forester authorization).

The plans can be conservation-focused or more intensive in forestry activities. At the intensive scale, certain practices are "acceptable" from a forest management point of view, but may conflict with more sensitive conservation values, such as requirements to protect species at risk.

Landowners pay the cost of hiring a MFTIP plan approver ($100s), and require time and detailed knowledge of the property to make the program work well.

MFTIP is currently under review by the province. The program could be improved with additional tools, incentives, and priority status for opportunities for conservation. It is popular in the GGH, where forested land faces a high tax rate.

7.2.2 Market-based certification

Market-based certification programs encourage stewardship by offering formal recognition through certification. Typically, certification is conducted by a non-governmental, third-party organization, responsible for developing the necessary standards and credit structures for certification and handling the overall administration of the program.

For a project to be certified, it must demonstrate compliance with habitat-based design construction and/or certain management standards. These programs may also require projects to undergo project monitoring or reporting following receiving certification. Private landowners, municipalities, Indigenous Communities, and Conservation Authorities participate in these initiatives.

One example of market-based certification in the GGH is the Forest Stewardship Council (FSC), the only voluntary certification system of good forestry practices supported by major environmental organizations. Standards provide consistency in implementing good forest practices, including consultation with and consent from Indigenous Peoples and management for environmental values such as the protection of species at risk and conserved areas.

Canada has two new standards:

- a national standard for industrial and large-scale forestry
- a “small holders” standard for small-scale, low-intensity, and community forests.

The latter is not yet in effect, but is being approved by FSC International for implementation in 2021. Currently, smallholders manage their forests according to special requirements under various regional standards. The new smallholder standard requires forest managers to develop a conservation area network that covers a minimum of 10 per cent of the forests. This network must be intended to support contributions to regional, provincial, national, and international **conservation** and **protected area** targets, many of which are covered under the SONC mandate. The new standard also contains requirements:

- to protect special cultural, spiritual sites for Indigenous Peoples
- to protect species at risk
- to prevent loss of biodiversity
- to protect watercourses and waterbodies, riparian zones, and water quality
- to set limits on forest conversion
- to maintain high conservation values (ecological, community well-being, cultural values)

The FSC-certified forests in the Greater Golden Horseshoe are currently certified under the Great Lakes St. Lawrence Forest Standard (see Table 7.1). Forests are managed by certificate holders or their representatives and audited by certification bodies, which are accredited and audited in turn by ASI international.

Table 7.1 *FSC-certified forests in the Great Golden Horseshoe*

Forest	FSC certified?	Area (ha)	Notes
Northumberland County Forest	Y	2,225	Part of the Eastern Ontario Forest Group Certificate (EOFG). Great Lakes St. Lawrence Standard
Regional Municipality of York	Y	2,400	Great Lakes St. Lawrence Standard (GLSL)
Corporation of the County of Simcoe	Y	13,377	Great Lakes St. Lawrence Standard
Halton	Y	665	Part of the EOFG Certificate and Great Lakes St. Lawrence Standard
Town of Oakville	Y	842	Part of the EOFG Certificate and Great Lakes St. Lawrence Standard
Long Point Region Conservation Authority	Y	78	Part of the EOFG Certificate and Great Lakes St. Lawrence Standard. Not all this forest is in the GGH.
Paul Robertson (private owner)	Y	24	Part of the EOFG Certificate and Great Lakes St. Lawrence Standard
Silv-Econ	Y	2,130	Silv-Econ Group Certificate. Great Lakes St. Lawrence Standard. approximate area. Some individual properties not accounted for here. Most of the area is in Peterborough County Forest.
Total FSC certified forest currently	Y	21,742	Approximate total FSC certified forest currently. This is likely an under-representation of total number by less than 1,000 ha.
Credit Valley Conservation Authority	N	1,721	FSC Certification is recommended in Sustainable Forest Management Plan September 2020
Minimum potential FSC area in 2021		23,463	

In addition to the forests listed in Table 7.1, adjacent unceded (Crown) lands – French Severn Forest and Bancroft Minden Forest – are also managed to the FSC Standard.

Individuals can participate as stakeholders in audits and in the development of forest management plans and standards through public consultations, standards development groups, or on the FSC Canada Board of Directors. FSC certification provides tools, incentives, and priorities for conservation, but it requires intensive commitment to get good results.

SONC members can engage in audits and management plans on these forests and test these processes for increasing protection and connection. SONC can also engage certificate holders and forest managers to work with SONC members and partners to ensure efficient and effective establishment of conservation area networks that line up geographically with SONC areas.

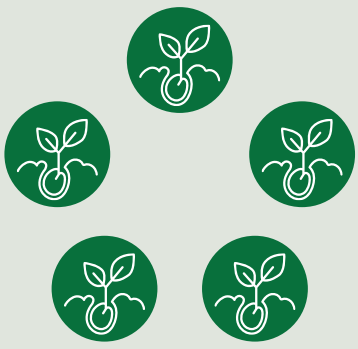
This cooperative work can have multiple benefits: bringing additional expertise and data to FSC-certified forests and making the conservation network both inside and outside certified forests stronger. Cooperative work can also make the transition to the new standard easier for certificate holders.

7.2.3 Community-based initiatives

Community-based initiatives involve outreach to recruit landowners for specific conservation and environmental issues within a specific geographic location. These initiatives may provide ongoing technical and implementation assistance and organizational tools, and may follow up with long-term monitoring and adaptive management. New technology platforms with remote assistance offers opportunities to support more landowners more equitably and efficiently across many communities and partnerships with consistent standards.

The Cootes to Escarpment EcoPark System is an example of a voluntary community-based initiative. It supports stewardship efforts with the cooperation of neighbouring landowners, the private sector, and stakeholders:

- **Private Residential Landowners:** Private landowners can apply for free one-on-one consultation to identify habitat enhancement and water quality projects. These projects are accomplished by organizing workdays with volunteers from the public and local groups. In addition, public workshops offered through Conservation Halton educate landowners on how to accomplish habitat enhancement and water quality improvement projects on their property on their own.
- **Private Business:** The stewardship program extends the same services as residential landowners to businesses. Workdays and workshops for staff can be organized either on the business's own property or elsewhere in the EcoPark System.
- **Local Groups:** The EcoPark System supports local groups (NGOs, schools, special interest groups etc.) by leading and assisting events that align with EcoPark System goals. This includes speaking at engagements, hosting booths, providing volunteers, resources, or sharing funding, and by promoting events through its networks. The "Friends of the EcoPark System" group comes together twice a year at meetings to update each other on current stewardship activities.
- **EcoPark System Partners:** The EcoPark System Stewardship Subcommittee, a group of partner staff directly involved with natural lands management, collaborates on ecological restoration projects, events on partner lands, and communications materials such as signage.



Other examples of community-based initiatives in the GGH:

Sustainable Neighbourhood Action Plan Program run by Toronto and Region Conservation Authority and Credit Valley Conservation

Carolinian Canada's "In the Zone"

Halton Watershed Stewardship Program

Rural Clean Water Program

Local municipal and not-for-profit pollinator garden programs

In the Zone (ITZ)

This multi-partner platform guides and supports diverse landowners to grow native plants, which support healthy landscapes with consistent standards. The app helps landowners measure and improve the health of their property in terms of biodiversity, climate-smart habitat, and socio-economic benefits of nature. It represents a cost-effective way to engage and deepen relationships with large numbers of landowners. Participation for individuals and partners is free. Community data reports are available for a service fee.

The program involves social marketing (garden signs, ITZ native plant tag), tracking impact, guiding resources (garden guides, plant lists, an expert hotline, and educational talks), community building (events, webinars, online forum, newsletter), and support for the native plant industry (developing seed strategies, facilitated the development of the Ontario Native Plant Growers Association, continue to work with and support local growers).

The program is web-based, free, and voluntary, developed by World Wildlife Fund Canada, Carolinian Canada, and partners. About 5,000 people are engaged in growing native plants across the Carolinian Zone as of May 2020. Promotion is carried out through strategic partners (such as Conservation Authorities, municipalities, local nature groups). The app, which has the potential to expand with modules for specific needs for different communities:

- builds landowners' capacity to make best on-the-ground decisions for biodiversity, using a DIY approach
- creates a community of informed consumers for native plants to support the growth of a local green economy
- creates a community of individuals and institutions that value and promote voluntary stewardship, restoration, and protection of nature
- is easy and accessible to use
- tracks ecological data and impact or cultural and natural habitat
- can map where voluntary actions are occurring across the Carolinian Zone
- provides data feedback on cultural values and motivations which are driving healthy habitat actions

The organizers are now exploring the impact of giveaways, discounts, and payment for action. In the Zone is primarily grant-based and needs a core funding source. The main cost of running the program consists of a remote team, including ecology, IT, and communications specialists.

7.2.4 Payments for ecosystem services

Payments for Ecosystem Services is an incentive-based VCM that compensates landowners who implement practices with positive impacts on an ecosystem, safeguarding the associated ecosystem benefits for the future.

These programs create a market for ecosystem services, exchanging them for payments, such as cash, in-kind contributions, or a combination of the two. In-kind payments include loan waivers, access to finance, or the provision of key inputs or services.[165]

Example: ALUS: Alternative Land Use Services

ALUS works closely with farmers and ranchers across Canada to create green infrastructure and generate ecosystem services alongside their productive, working landscapes. ALUS has worked with 800 participants to restore and enhance more than 25,000 acres of land.

ALUS activities include restoring and enhancing wetlands, establishing and maintaining wildlife habitat, creating riparian areas, creating pollinator hedgerows, supporting reforestation, planting native trees and shrubs, erecting wildlife-friendly fencing, establishing native grass prairies and meadows, and building nesting structures.

The outcomes and community benefits of the ALUS program include cleaner air, cleaner water, flood prevention, improved biodiversity, increased carbon sequestration, protection of ecologically sensitive areas, increased habitat for wildlife and species at risk, and improved pollinator health.

ALUS shares the initial cost of the work with landowners, and provides an annual payment to the farmers, recognizing their contribution to the ecosystem and community.

7.2.5 Conservation easement agreements and land trusts

A conservation easement agreement is the strongest tool available to landowners who want to protect their land forever while holding title to the property. Landowners work with a qualified easement-holding organization to register the legal agreement on the title of their property. The easement is permanent and can never be removed.

An easement can be tailored to the land protection interests and needs of each landowner. Covenants can be included that protect both natural areas (such as wetlands or woodlots) and farmland. Restrictions can prevent future severances, buildings, roads, dumping, tree removal, toxic substances, and other disruptive activities. In addition to protecting the land forever, the landowner benefits by receiving a charitable receipt for any decrease in the value of the property, because CEAs can have a negative impact on the land value. The costs of easements vary greatly, depending on the nature of the property, along with future stewardship obligations.

Easements are an effective tool to protect the ecological features of property, in a manner that can be directed by the landowner in agreement with an eligible conservation charity. Landowners maintain ownership of the property, but the values are protected if the land changes ownership. An easement supersedes municipal planning and gives power to individuals to protect their land (as enabled by the *Conservation Lands Act*). The land is monitored over time by the conservation organization to ensure that the conditions of the easement are upheld.

The original landowner is usually very supportive of the easements, but for subsequent landowners without regular support from the easement-holding organizations, challenges could arise. And without regular monitoring, damages to an easement can also occur – resulting in ecological features that are not protected in perpetuity and in potentially significant financial and legal risks to the easement holding organization.

Provincial support for land trusts

Because conservation of Ontario's rich biodiversity is a shared responsibility, the Ontario government is investing $20 million over the next four years in the Greenlands Conservation Partnership program. Some of this funding will go the Ontario Land Trust Alliance to help community land trusts conserve, restore, and manage natural areas such as wetlands, grasslands, and forests. This initiative will help mitigate the effects of climate change and increase the number of conserved natural spaces for the public to enjoy. Up to 15 projects a year will be funded through this program, securing and restoring natural areas across key priority habitats, including fragmented landscapes within southern Ontario, including the Greenbelt.

Ian Attridge, a lawyer from in Peterborough, Ontario, recently provided recommendations for consideration by the provincial Protected Areas Working Group for expanding the use of conservation easements. Ian is a former policy advisor to the Ontario Ministries of Natural Resources and Environment with experience working Land Trusts. These recommendations include:

- broadening the application of conservation easement agreements to enable conservation for scenic, Indigenous, and other protected area-related purposes, such as trails or cultural sites, and expanding the type of qualified participants in these agreements
- improving the enforcement of agreement provisions and the defence available when the agreements are challenged
- establishing a registry of agreements
- preparing a guide for those interested in entering into agreements
- allowing land trusts and government agencies the right to get notice, make arrangements to pay a cancellation price, and match the highest bid for certain lands sold for unpaid municipal taxes
- creating a liaison committee among various ministries, municipalities, Indigenous organizations and land trusts to work on joint policy, program and data sharing initiatives
- streamlining administration and reducing costs in the operation of the Conservation Land Tax Incentive Program (CLTIP) and the Managed Forest Tax Incentive Program (MFTIP) that support land trusts' protected areas

RECOMMENDATIONS

The provincial government should Improve property tax incentives for land trusts by streamlining administration and reducing costs in the operation of the Conservation Land Tax Incentive Program (CLTIP) and the Managed Forest Tax Incentive Program (MFTIP) that support land trusts' protected areas. This would include enabling CLTIP renewals for land trusts every 10 years (similar to MFTIP, rather than every year), and ensuring that Indigenous land trusts and practices qualify for the programs. Program improvements would better support landowners who conserve important natural, forest and other publicly valued features and give due recognition of the public benefits they provide.

Public and private landowners should develop shared impact frameworks and metrics and share resources to build nature norms and best practices for greater long-term resiliency and efficiency in managing land trusts. For example, use protected and conserved areas as a model and hub for voluntary action and as centres of stewardship excellence.

8. Nature's benefits to the GGH

Near-urban nature is not a “nice-to-have” feature, but a “must-have” prerequisite for healthy and resilient communities. The COVID-19 pandemic has made this fact very clear. In a region in which so many diverse communities and people live together, biodiversity is not the sole objective of conservation efforts like the Near-Urban Nature Network. Efforts to protect and conserve land should be guided by the many benefits that nature provides to people and ensure these benefits are equitable for current and future generations.

Beyond supporting biodiversity, near-urban nature can:

- increase climate resilience to flooding, extreme heat, and drought
- improve water and air quality
- provide publicly accessible green space for recreation, community-building, and spiritual and cultural connection

A review of official plans in southern Ontario found many references to the benefits of nature to communities and noted that cultural ecosystem services were most commonly identified.[166] In addition to cultural benefits, Near-Urban Nature Networks also support climate resilience, health and well-being, and local economies. Some of the many benefits of nature for people are described in this section, along with opportunities to enhance Near-Urban Nature Networks to improve people’s lives.

8.1 Climate resilience

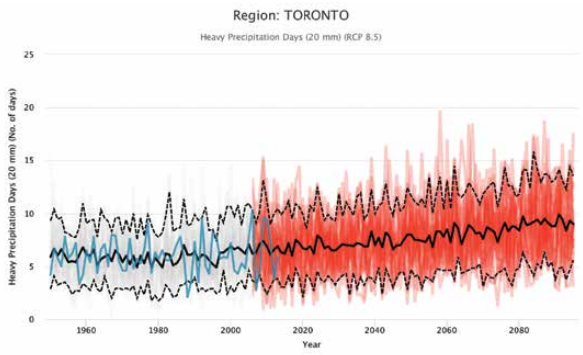
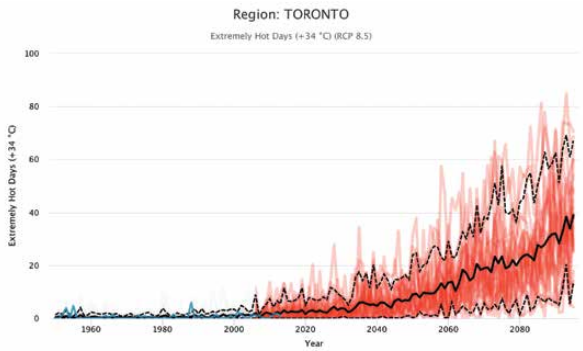
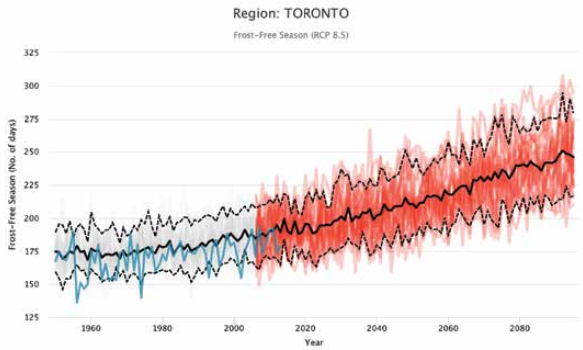
Co-benefits” and “multiple outcomes” of conservation and natural infrastructure need to be emphasized in communicating and valuing near-urban nature. Climate change mitigation and adaptation benefits were frequently mentioned in our interviews and surveys, particularly flood attenuation.

Climate change increasingly places stress on all life in the Greater Golden Horseshoe, although it will affect some areas more than others. Table 8.1 identifies some anticipated changes and impacts. While urgent action is needed to mitigate the impacts of climate change by reducing greenhouse gas emissions, there is also a pressing need to adapt to inevitable changes. These changes, along with continued changes from urbanization and population growth, will have complex and interconnected ecological, cultural, social, and economic impacts. Climate action and reconciliation with Indigenous Peoples are strongly linked and this must be acknowledged and addressed by those working in the environmental field.

Climate risk and human health

Climate change, including hotter weather and more drastic changes between cool and hot weather, will have health consequences. While flooding is the costliest climate risk in the GGH in terms of property damage, heat is often called the “silent killer” and tends to get less media and political attention, although the risk to human lives is much higher than those of other natural disasters.[167]

Table 8.1 *Anticipated climate changes and potential impacts on ecological and social systems in the GGH*

Climate change impact in the Toronto Region	Potential impact on biodiversity	Potential impact on communities
 **WETTER**	Increased runoff can lead to increased pollution and sediments, affecting species and water quality.	Flooding puts human lives and property at risk. In addition to the financial implications, flooding can have long-term mental health impacts on people who experience them.
 **HOTTER**	Warmer temperatures may cause wetlands, vernal pools, and other rare habitats to dry out, increasing the risk of extinction for the species that rely on these habitats.	In cities, which are already hotter because of the urban heat island effect, human lives could be lost to extreme heat, especially for older people and those living in poverty. Quality of life and well-being will be impacted by heat stress.
 **CHANGES IN GROWING SEASONS**	Seasonal changes disrupt synchrony in biological systems. For example, flowers may bloom before insect pollinators have emerged, or insect populations may peak before birds begin breeding.	Changes in seasons may impact growers in a variety of ways, especially those who rely on native pollinators.

Source: Canada Climate Atlas, 2021

Flooding is the most frequent and costly (in terms of property damage) natural hazard in the GGH and a top concern for municipalities. Drought, extreme heat, and poor water quality are also growing concerns.

Both established and emerging approaches can reduce flood risks through the creation of natural infrastructure. For example, one of the primary mandates of Conservation Authorities is to manage riverine flood risks through natural system and watershed planning and the management of hazard lands. Many municipalities in the GGH have strategies and plans that mention natural infrastructure to reduce flooding and other climate risks. However, incorporating climate change adaptation into these policies and decision making is still in its early stages. The climate adaptation value of natural areas is not necessarily considered in land use planning decisions and interpretation of these policies.

Protecting and restoring near-urban nature is an underused option for climate change adaptation and infrastructure services that is in many cases more affordable and effective that creating new "grey" infrastructure.

The Government of Canada's 2021 Budget proposed a dedicated $200 million over three years in a Natural Infrastructure Fund to support the use of natural infrastructure. If developed with biodiversity outcomes in mind, this fund could support dual action on biodiversity and climate change. However, it should not be assumed that all action to mitigate or adapt to climate change will automatically benefit biodiversity.

A recent co-authored paper from Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Intergovernmental Panel on Climate Change (IPCC) stresses that neither biodiversity loss or climate change will be successfully resolved unless both are tackled together.[168] One example of a climate mitigation action that could potentially have adverse impacts on biodiversity is planting trees in ecosystems that have not historically been forests and reforestation with monocultures – especially with exotic tree species. Canada's first National Adaption Strategy, currently in development, will be a key opportunity to ensure climate change adaptation actions support positive biodiversity outcomes.

The INTACT Centre on climate adaptation[169] found that leaving wetlands in their natural state could reduce the financial costs of flooding. Canada cannot afford to lose any more of the adaptation benefits provided by wetlands, as property damage and insured losses across Canada to flooding are increasing.

8.1.1 Nature-based solutions

Nature-based solutions are protection, restoration, or stewardship measures implemented specifically to address a societal issue.[170] This term is commonly used in discussing climate change mitigation and adaptation measures. Nature-based solutions in near-urban contexts can provide some climate change mitigation effects and hold vast potential as climate change adaptation measures. However, nature-based solutions are not a substitute for the rapid phase-out of fossil fuels.[171]

The IUCN's Global Standard for Nature-based Solutions[172] identifies the following criteria for nature-based solutions, which should meet all the criteria to some degree. These solutions:

1. effectively address societal challenges
2. are informed by scale in their design
3. result in a net gain to biodiversity and ecosystem integrity
4. are economically viable
5. are based on inclusive, transparent, and empowering governance processes
6. equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits
7. are managed adaptively, based on evidence
8. are sustainable and mainstreamed within an appropriate jurisdictional context

RECOMMENDATION

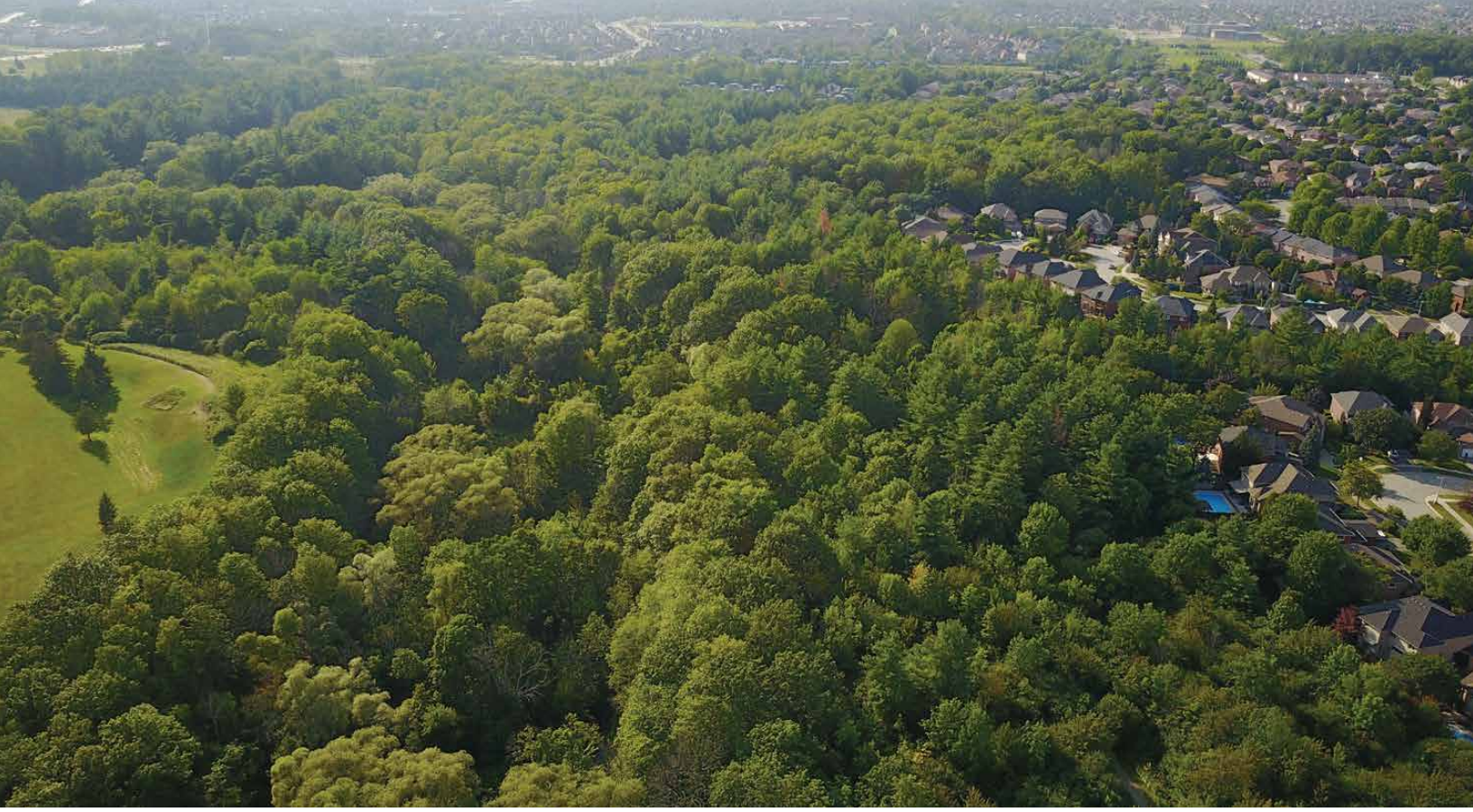
The federal and provincial governments should increase their support for climate adaptation planning that focuses on nature-based solutions that deliver on biodiversity as well as social and cultural outcomes and scale up nature-based solutions research for flood and heat vulnerability to support adaptation planning across the region.

8.1.2 Carbon storage and sequestration

Nature-based carbon sequestration is receiving growing recognition as a needed action toward climate resilience. A study published in 2021 shows that natural climate solutions in Canada could mitigate up to 78.2 (41.0 to 115.1) million tonnes of CO^2 equivalent per year in 2030. Avoiding the conversion of grassland, avoiding peatland disturbance, maintaining cover crops, and improving forest management offer the largest mitigation opportunities.[173] Grassland in this case includes a broad definition beyond native grasslands and includes areas used for pasture. In the GGH, grassland is often converted for tilled crops and urbanization. Protecting diverse grasslands and farmland has climate and biodiversity benefits.

Forests in the Greenbelt store an estimated 29.6 million tonnes of carbon.[174] Keeping forests intact permanently is essential for carbon storage. In near-urban environments, however, growing, transporting, planting, and tending trees can be carbon-intensive. Urban trees do sequester carbon, but this is often a secondary co-benefit alongside more significant values such as providing shade and contributing to flood prevention. Urban tree plantings tend to be smaller in scale, less dense, and subject to stressors such as pollution and damage. For these reasons, prioritizing projects based on carbon sequestration potential alone could limit the opportunity for tree planting in near-urban contexts, where the need for more trees and opportunity for engagement is high.

Protecting intact natural areas to maintain existing carbon stores is critical. Restorations do not offset the amount of carbon currently stored in these ecosystems. This is one way that the protection of wetlands, forests, grasslands, and healthy agricultural soils contributes to overall climate resilience.



8.1.3 Hydrology

Natural areas play a critical role in the water cycle, globally and locally. By way of soil formation, transpiration, and other ecological functions, natural areas reduce flood risk and help manage stormwater. These benefits will become even more valuable as the climate changes and rainfall becomes more intense. Trees, other plants, fungi, and soils change the way rain moves across the land, slowing it down, and helping it infiltrate the ground.[175]

Just as near-urban nature can reduce flooding in cities, it can also help maintain soil moisture on and around agricultural fields. Compared with urban areas, natural areas provide greater groundwater recharge. This is an important function, as many municipalities in the GGH rely on groundwater; with increased population growth and industrial use of water, increased pressure on the water system could potentially lead to more frequent or severe droughts.[176]

8.1.4 Heat

Increasing temperatures are compounded by the urban heat island effect. Communities with the smallest amounts of green space experience the urban heat island effect more than those with plentiful green space. Natural areas and green infrastructure help moderate temperatures in cities, and have been associated with dramatic reductions in heat-associated health impacts.[177]

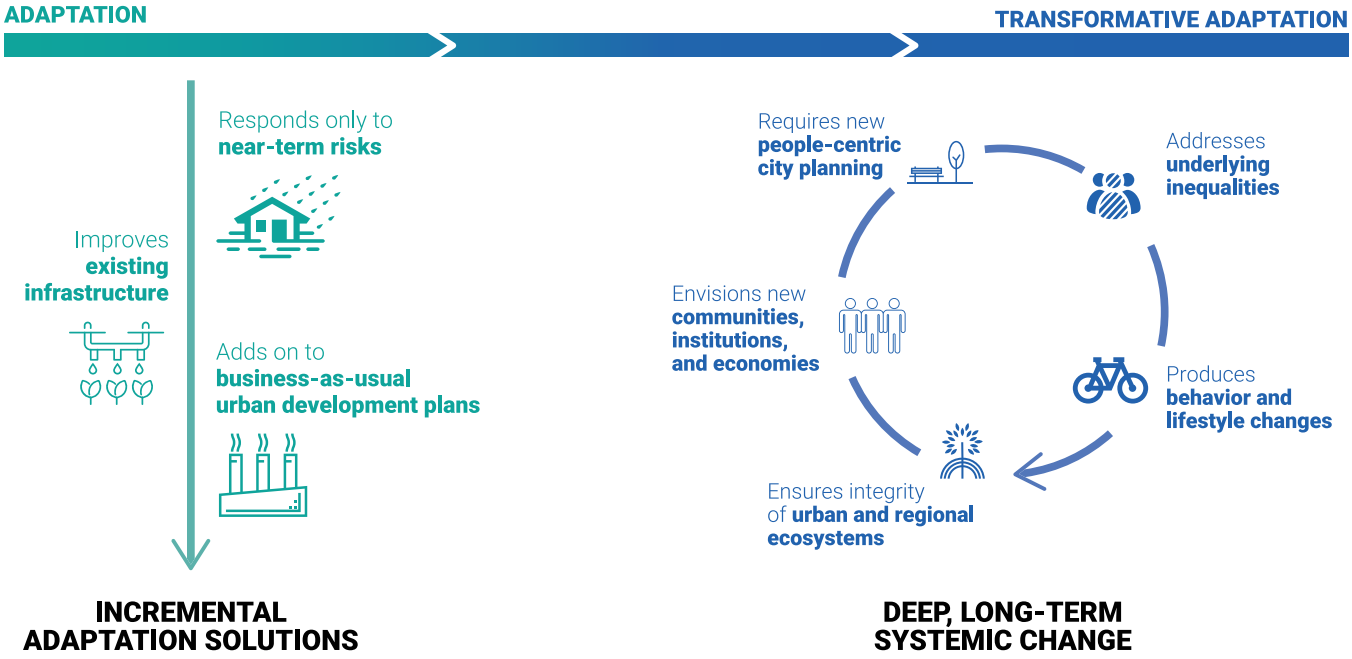
Individuals and communities may cope with extreme heat by, for example, installing air conditioning or changing activity patterns. These options are not available to everyone, and underlying health conditions, old age, and low incomes can make people particularly vulnerable to the effects of extreme heat.

Modelling shows that forests could reduce temperatures by up to 11ºC during a heatwave in suburban neighbourhoods in the GGH.[178] Urban green spaces and tree canopy cover offer additional health co-benefits and improved quality of life.

8.1.5 Transformation adaptation

The World Resources Institute's Background Paper on *Unlocking the Potential for Transformative Climate Adaptation in Cities* provides advice on moving from incremental approaches to transformative ones. It highlights multi-scale and multi-actor efforts to integrate climate change mitigation, adaptation, and social equity. It also recommends prioritizing nature-based solutions to holistically manage water and heat risks and include communities in decision making (see Figure 8.1).

Figure 8.1 *Unlocking the potential for transformative climate adaptation in cities*[179]



Source: Author's synthesis, adapted from Bazaz et al. 2018.

8.1.6 Examples of nature-based solutions in the GGH

More than 500 local governments in Canada have declared a climate emergency.[180] Nature-based adaptation measures can support the climate change goals of municipalities, but many municipalities lack the resources to fully implement nature-based solutions. Large municipalities in the GGH are leading the way and learnings can be shared with communities across the region and Canada. Two examples are provided here.

Hamilton Saltfleet Conservation Area Restoration

The Hamilton Conservation Authority is creating a new conservation area above the Niagara Escarpment in the Upper Stoney Creek and Upper Battlefield Creek watersheds in Hamilton's east end. The purpose of the new conservation area is to:

- reduce downstream flood risks to residential and commercial properties by enhancing and enlarging existing wetland areas, creating new wetland areas, and restoring the natural features and functions of watercourses in the area
- support community well-being by creating new recreational opportunities and linking to the Dofasco Trail
- support biodiversity by creating new wildlife habitat and connective corridors to other local conservation areas

Even by conservative estimates, the 50-year net present value of the flood attenuation, recreation, carbon storage, water filtration, and biodiversity benefits resulting from this project is $24 million. If climate or land use changes increased the incidence of 50-year floods increases by 2 per cent, this estimated value of these services grows to $44.2 million. These values do not capture important ecological, cultural, or social benefits, including the potential for protecting culturally significant species or the mental health benefits of this restoration, but they do highlight how restoration projects that can help with municipal infrastructure needs can be even more valuable as the climate continues to change.[181]

York Region

In 2019, York Region was approved for $10 million in funding through Infrastructure Canada's Disaster Mitigation and Adaptation Fund to implement a natural infrastructure project, one of the first examples of this fund's specifically investing in natural infrastructure. Approval of this project indicates a growing awareness that proper natural asset management can help Canadian municipalities adapt to and mitigate climate change. York Region's project will focus on planting more than 400,000 trees and shrubs over eight years with a total project cost of $25 million.

The project involves acquiring 100 hectares of land and planting more than 200,000 trees in priority areas. These land securement and afforestation efforts will help offset the urban heat island effect and mitigate downstream flooding by intercepting, storing, and slowing the flow of water. The Region is working with the local Conservation Authorities to identify high-priority areas across the Region for these afforestation efforts.[182]

York Region is home to 1.11 million people, most of whom live in densely populated urban areas in the southern and central parts of the Region. Important ecological and hydrological features in York Region include the Oak Ridges Moraine, which plays a critical role in the prevention of urban flooding and the protection of groundwater. The protection and restoration of these green spaces will help make York Region more resilient to the changing climate.

RECOMMENDATION

Senior governments should include focus and direction for supporting biodiversity through nature-based solutions. Opportunities for this guidance include the upcoming Federal Climate Change Adaptation Plan and Ontario's Climate Change Impact Assessment.

All municipalities that have not already done so should identify risks to the natural functions of ecosystems associated with climate change impacts and ensure that near-urban nature network planning incorporates climate modelling.

Municipalities in the GGH that do not have forest or tree protection bylaws should assess the potential benefit of these tools, with consideration of future climate adaptation needs as well as social and cultural values. These opportunities should be explored with Indigenous Peoples and Communities, farmers, and residents.

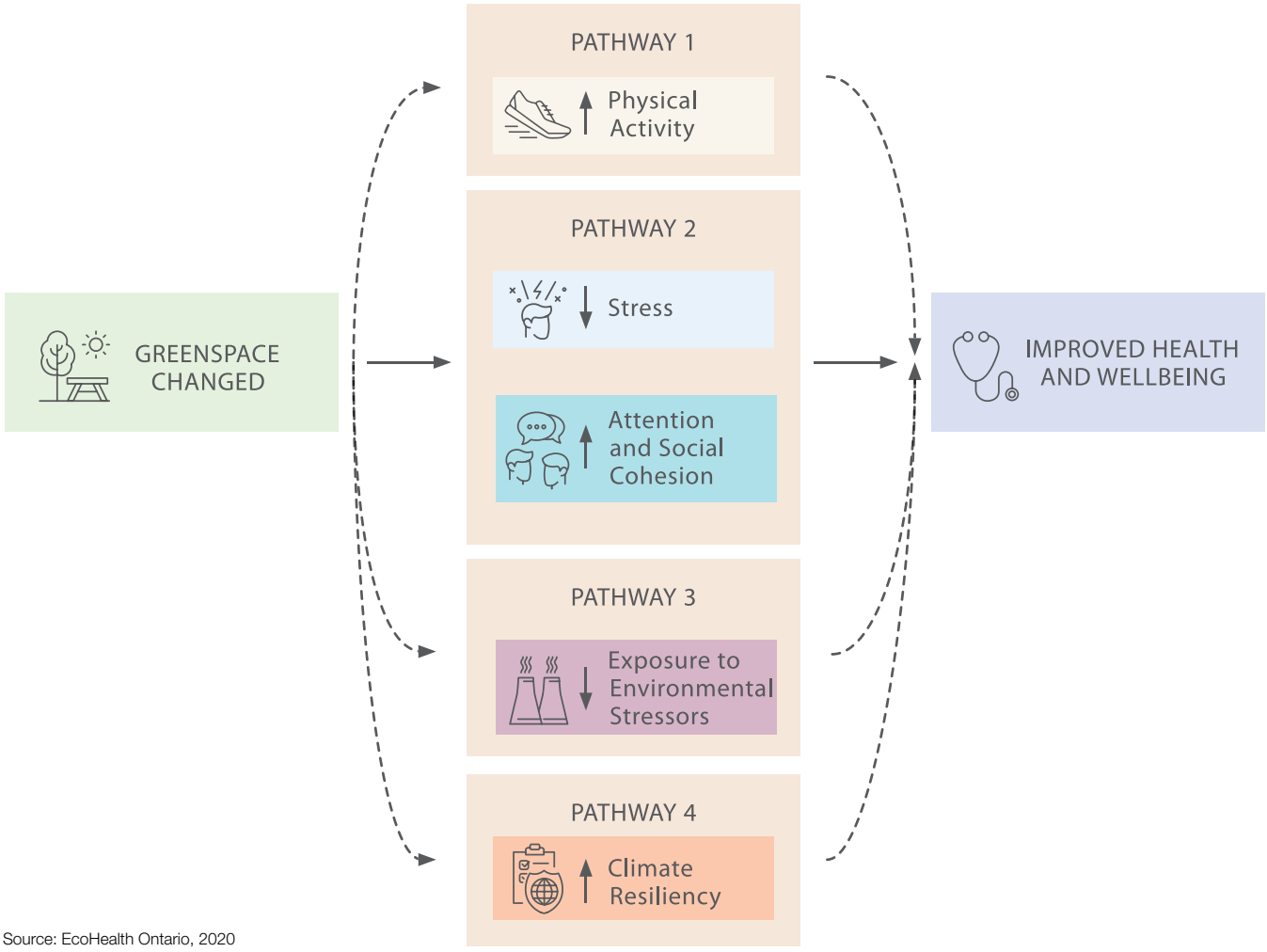
8.2 Health and well-being

Human health and well-being is closely linked to environmental factors. Climate change is one large and significant challenge for public health. In 2021, Health Canada will publish a scientific assessment report entitled *Health of Canadians in a Changing Climate: Advancing our Knowledge for Action*. Through this report and subsequent actions, near-urban nature can play an important role in helping reduce health risks and improve well-being. Even without the pressing need for climate change adaptation, protection and restoration of near-urban nature provides human health and well-being benefits through multiple modes.

8.2.1 Human health

A 2020 report by EcoHealth Ontario demonstrates how different types of investment in green spaces (such as restoration or increased access) provide human health and associated economic benefits. Near-urban nature exposure and access can lead to increased physical activity, lower personal stress levels, improved social connections, reduced exposure to pollutants, and enhanced resiliency to climate change (Figure 8.2).

Figure 8.2 *Pathways between green space [nature] and improved health and well-being*

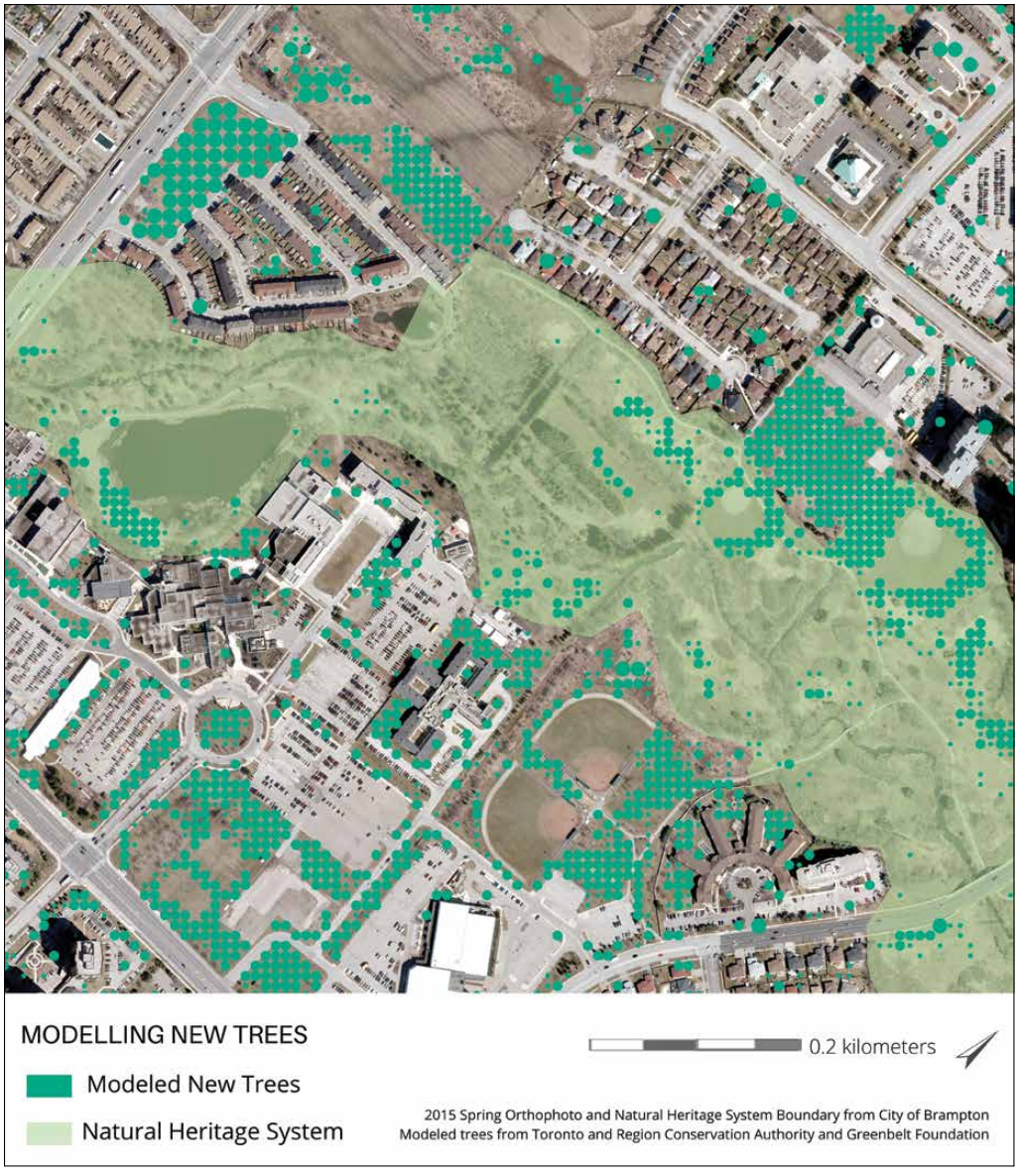


Source: EcoHealth Ontario, 2020

Many policies and programs of municipalities and Conservation Authorities help protect human health and well-being, for example by protecting drinking water sources. Recent research from Quebec has found that land use and land cover at the watershed level is a stronger driver of water quality than protected area status alone.[183] This finding highlights the importance of watershed-based agencies such as Conservation Authorities for protecting water quality. The findings also suggest that protection should be focused where risks of land use changes are higher, as is the case in the GGH.

Several municipalities in the GGH are integrating human health considerations into their nature and urban forestry programs. For example, municipalities and Conservation Authorities in Peel are planting trees in urban areas to reduce exposure to extreme heat and associated negative health impacts. Research has demonstrated that increasing tree cover could help counteract neighbourhood-level urban heat island–related health impacts and is associated with millions of dollars in net benefit based on health values alone.[184] Adding about 54,000 trees in one neighbourhood in Brampton would return a net benefit of $3 million a year associated with health benefits, including reduced air pollution and exposure to heat, increased physical activity, and improved mental well-being (see Figure 8.3).

Figure 8.3
Model of tree plantings in Brampton neighbourhood along urban river valleys as part of an analysis of tree planting to reduce the urban heat island effect in suburban neighbourhoods.



18%-33%

increase in tree cover could have potential to cut the number of very hot days by 2080 in half. (EcoHealth, 2021)

This research is feeding into the Peel Climate Change Partnership's Green Natural Infrastructure Strategy and has already been helpful in securing funding for implementation of tree planting in this neighbourhood, including funding support from Environment and Climate Change Canada's Climate Action and Awareness Fund. The strategy addresses human health, climate resilience, inequity, and ecological benefits by reducing heat islands and increasing forest cover along urban river valleys. While the modelling was undertaken as a proof of concept for the way in which trees improve human health and well-being, the actual locations of afforestation and tree planting are to be determined.

Credit Valley Conservation Authority and Toronto and Region Conservation Authority have been working for years with the City of Brampton and Peel Region and have established two Sustainable Neighbourhood Action Plans that take an applied and multidisciplinary approach to community-driven sustainability initiatives. The long-term presence and connections established through these programs will help mobilize action and highlight the benefit of investing in neighbourhood-scale planning to help deliver on nature-based solutions.

8.2.2 Individual values and psychological needs

Everyone has a connection to the natural world and these connections are strong drivers of the way people view conservation and make decisions.

Place attachment is a connection to unique landscapes and special places. Place attachment can form from personal or community experiences and values and can vary from individual to individual. Creating opportunities to be in nature as a community and undertake culturally significant practices (ceremonies, rites of passage, rituals) can help create place attachments. Further, communicating the special qualities of a place in relation to a diversity of cultures can increase the number of people who feel cultural connections to a place. For example, when considering the relation between place attachment and willingness to adopt conservation easements, agricultural landowners are distinctive, because their sense of place is often developed in relation to a working landscape. Agricultural land is part of a cultural landscape based on its use for agricultural purposes, separate from its residential, recreational, aesthetic, or spiritual value.[185]

Nature-deficit disorder describes the effects of loss of time and recreation outdoors.[186] Educators and others are realizing how limited outdoor experiences in childhood can impede creativity, learning, and spirituality, and lead to the accumulation of stress, incurring numerous health, and behavioural problems.[187]

Biophilia, a term popularized by E.O. Wilson, describes the innate human affinity for other forms of life and suggests this affinity is a product of evolution.[188]

Shifting baseline syndrome, a term coined by Ian McHarg, describes how humans gradually accept degraded or altered environments as the norm over time because it is all they have experienced, or because their memory of a place has faded over time.[189] Four antidotes to this phenomenon have been proposed[190]:

1. **Restoring the natural environment**, which can change the baseline in a positive way. People exposed to cleaner and healthier environments come to expect this as the norm.
2. **Monitoring and collecting data**, particularly through community science efforts that get many people involved.
3. **Reducing the "extinction of experience"** or people's disconnection from the natural world, from living in an urban area with little opportunity to interact with a diversity of non-human life.
4. **Education**, both formal and informal, including land-based learning, signage, and interpretation

Values related to nature can degrade from a variety of causes, such as changes in social norms (including spending more time indoors), the loss of values from one generation to the next, and forced displacement of communities from the land and their traditions. Programs that promote inter-generational land-based learning in Indigenous Communities or farmer-to-farmer mentorships can strengthen cultural connections to the land. Cross-cultural learning can similarly create new cultural values while building understanding across cultures.

EcoHealth Ontario

EcoHealth Ontario (EHO) is a collaborative of professionals in the fields of public health, medicine, education, planning, and the environment who are working together to increase the quality and diversity of the urban and rural spaces in which we live. The shared vision of EcoHealth Ontario is of a province in which everyone benefits from the provision of well-distributed, high-quality green space, is aware of its contributions to health and well-being, and has access to its benefits.

RECOMMENDATIONS

Municipalities and Conservation Authorities should use EcoHealth Ontario's Conceptual Framework to Understand the Business Case for EcoHealth in Ontario to evaluate the health benefits of protecting and restoring near-urban nature to build the case for investment.

Municipalities and Conservation Authorities should continue to develop neighbourhood-scale community sustainability plans, such as Sustainable Neighbourhood Action Plans, in priority neighbourhoods to build community connections to biodiversity and climate change adaptation objectives.

8.3 Cultural benefits

Workshop participants (especially land stewards) recognized that people in the GGH genuinely want to connect with nature and farmland.

The GGH is not just diverse in terms of species and ecosystems, but also human ethnicities, religions, languages, and cultures. Toronto is often described as one of the most multicultural cities in the world. Other cities in the GGH also have large populations of immigrants and first-generation Canadians.

Additionally, the GGH is diverse in its forms of human settlements, from big cities to small towns and rural areas, with many different ways of viewing its lands and waters. This diversity affects how people choose to interact with or steward natural areas. For example, when considering the relation between place attachment .and willingness to adopt conservation easements, agricultural landowners are unique because their sense of place develops in relation to a working landscape.

Despite the cultural, religious, and linguistic diversity in the GGH, many conservation communications and programs seem to speak to the "dominant" cultures of western, white, urban, highly educated, English-speaking settlers. Programs that specifically target rural cultural connections to the land, such as ALUS, which is specifically designed with and for farmers, are good examples of how culturally aware programs can be developed.

Other examples include Credit Valley Conservation Authority, which has run a program for Punjabi Seniors with Punjabi Community Health Services that allows the seniors a chance to go for a hike together in nature. Toronto and Region Conservation Authority's Professional Access into Employment (PAIE) innovative bridge training program, which helps internationally trained environmental professionals launch their careers in Engineering, Geoscience, Environmental Science and Planning, is another example. These successful programs could be replicated elsewhere in the GGH. The underlying approach of offering diverse communications and programming can and should be better incorporated throughout the process of building a Near-Urban Nature Network.

RECOMMENDATION

Municipalities and Conservation Authorities should continually seek to reflect the cultural diversity of the region by including a broader spectrum of cultures, worldviews, and languages in all programs and materials, for example, through storytelling to help all residents develop a sense of place in the GGH.

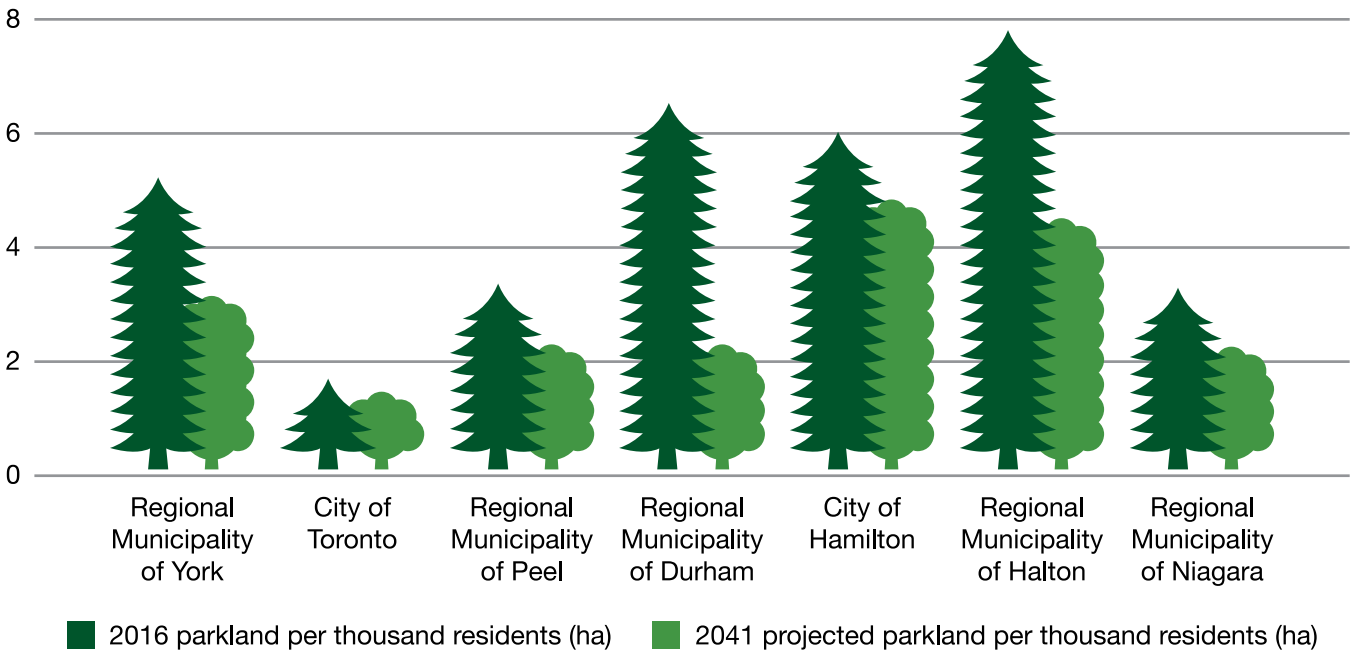
8.4 Urban green space and recreation

There was a significant increase in the use of natural spaces in 2020 due to the COVID-19 pandemic. On a national scale, a Leger poll commissioned by The Great Trail (also called the Trans Canada Trail) found that trail use increased by 50 per cent in 2020.[191] We also heard from many recreational land management representatives that attendance in and use of parks increased in the GGH.

From previous research, we know there is growing demand for recreational access to natural areas, which has put pressure on ecological and social dynamics in these places, as residents from urban areas drive to more rural ones to visit natural areas.[192] As the population in the GGH continues to grow, the demand for nature recreation in and near-urban areas will also grow. Nearly 15,000 hectares of large parkland is needed by 2041 to maintain the current level of per capita supply in the Golden Horseshoe.

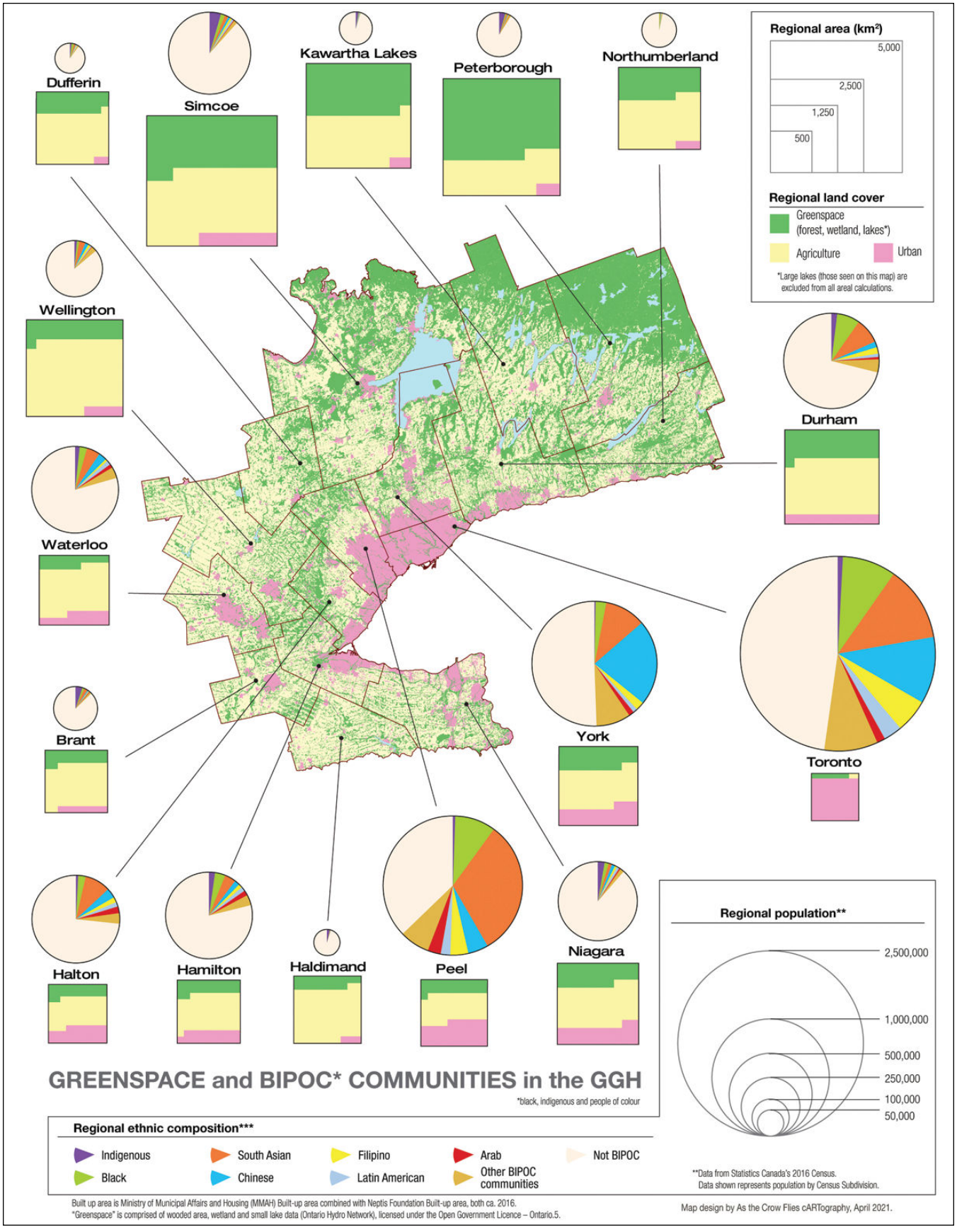
Figure 8.4 highlights the anticipated shift in parkland per capita in the Golden Horseshoe from 2016 to 2041. This figure demonstrates how the amount of parkland per person is expected to change as the population grows between 2016 and 2041. Accessible, well-maintained, and safe natural areas in and close to urban cores where more people live may offer the double benefit of making access to nature more equitable and reducing some of the pressures on peri-urban natural areas.

Figure 8.4 *Parkland per thousand residents, Greater Toronto and Hamilton Area and Niagara (the "Golden Horseshoe"), 2016 and 2041 (projected)*



At present, access to greenspace is not equitable across the GGH. Areas with greater ethnocultural diversity tend to have less natural cover. Figure 8.5 shows how census subdivisions with more natural and agricultural lands tend to have smaller and less diverse populations. Increasing greenspace in urban areas can help reduce recreational pressures on peri-urban natural areas while also making access to nature more equitable.

Figure 8.5 *Greenspace compared with Black, Indigenous and People of Colour populations in the GGH*



Urban green space creation can take many forms. Particularly in very dense areas with little public space, these efforts could include de-paving efforts like Green Community Canada's "Depave Paradise" program.[193] Recently a "3-30-300" rule has been promoted for moving toward more resilient cities in which every resident has a view of 3 trees from home, every city has 30 per cent tree cover, and everyone lives within 300 metres of a park.[194] Linear parks offer another innovative approach to increasing greenspace and a unique opportunity to connect communities, both human and more-than human.

Luckily both the geography of the GGH and development patterns have created opportunities for establishing linear parks where people can connect, travel, and exercise in natural settings, even in dense urban areas. For example, river valleys and naturalized utility corridors can increase opportunities to connect with nature. TRCA's Meadoway project in Scarborough, the City of Brampton's River Walk, and the Waterfront Trail are all good examples of linear parks in the GGH that could serve as models in dense areas.

It is expected that urban greenspace will have increased presence in the new international biodiversity agreement, currently described as the CBD's Post-2020 Global Biodiversity Framework. Target 11 of this draft document currently states "By 2030, increase benefits from biodiversity and green/blue spaces for human health and well-being, including the proportion of people with access to such spaces by at least [100%], especially for urban dwellers."

RECOMMENDATION

The federal government should support, with the help of Parks Canada, implementation of the near-urban nature objectives of *Parks for All: An Action Plan for Canada's Parks Community* and other programs to connect people with nature in Canada, while promoting greater focus on urban and near-urban nature through these programs and improving access and inclusion of marginalized communities and youth. This work would complement efforts Canada is already leading, such as IUCN's #Nature for All, and the current CBD Post-2020 draft Target 11: "By 2030, increase benefits from biodiversity and green/blue spaces for human health and well-being, including the proportion of people with access to such spaces by at least 100%, especially for urban dwellers."

8.5 Local economies

Near-urban natural areas contribute an estimated 8,700 jobs and $509 million in direct GDP impact in southern Ontario.[195] This value does not account for the economic value of ecosystem services in the region. Many economic sectors rely on the functions and benefits of a thriving natural system, including eco-tourism, agriculture, forestry, and native plant industry (as described in Section 6.3). Establishing a Near-Urban Nature Network by investing in the protection, conservation, and restoration of near-urban nature will result in economic benefits, including good jobs and thriving communities.

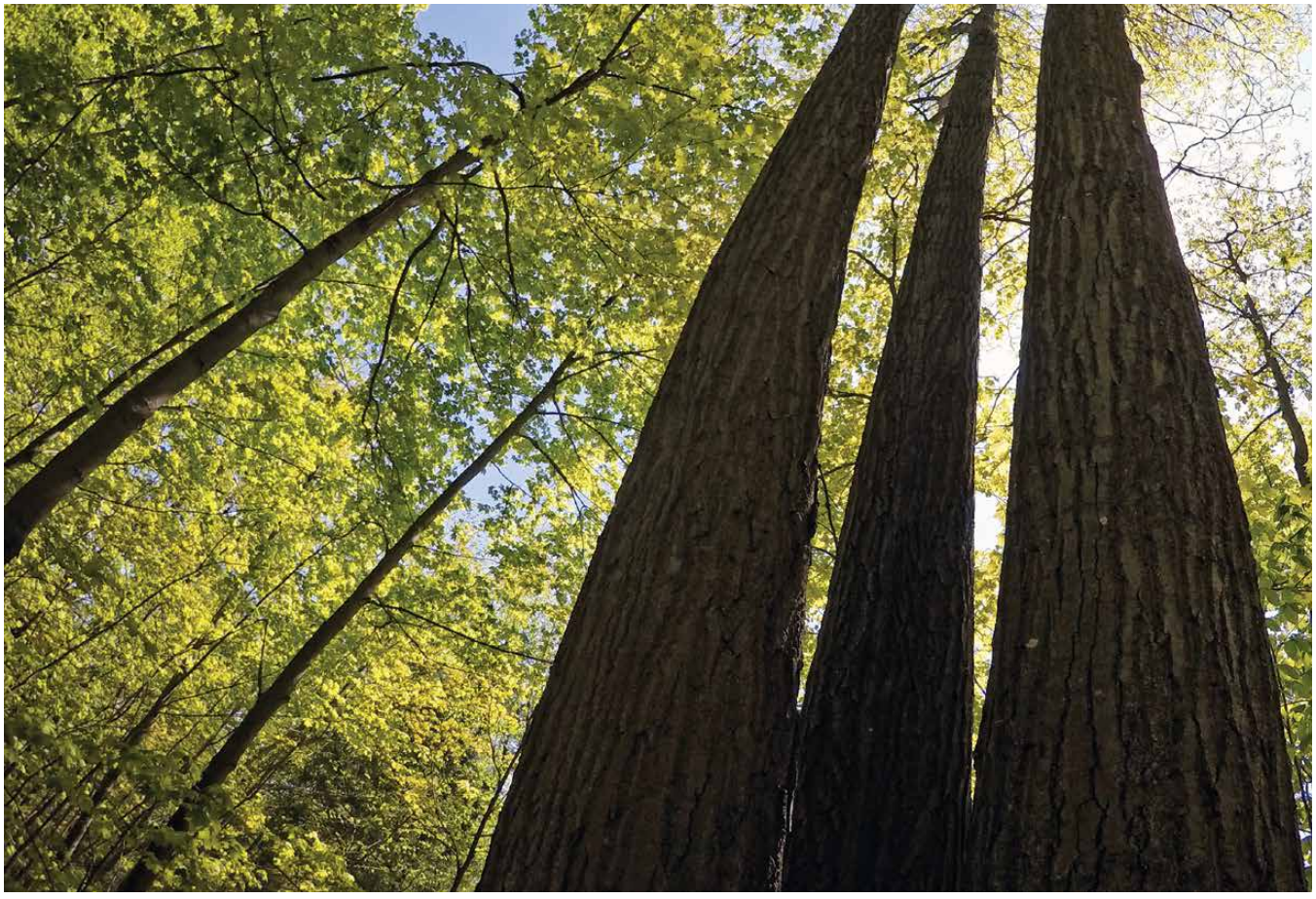
By protecting ecological, hydrologic, and agricultural systems, Ontario's Greenbelt directly and indirectly supports an economic contribution of $9.6 billion annually. The largest part of this contribution is related to the food sector, followed by arts, entertainment, and recreation.

A transition to a restorative conservation economy can grow social and natural capital instead of depleting it. Many goods that come from forests in the GGH are gathered, used, and sold. Collecting goods in a sustainable manner from woodlots can offer supplementary income to farmers and rural residents. Municipalities and Conservation Authorities often harvest from forests as well. From an Indigenous perspective, this interaction is beneficial, and when undertaken in a respectful, sustainable way, will improve the natural space. Local forest

products from sustainably managed forests can also reduce pressure on lands elsewhere and reduce the need for transportation. Timber, firewood, non-timber forest products, hunting, and non-extractive activities (such as ecotourism or event use) are all providing revenues in the GGH that could be enhanced by increased forest cover and education.

Some of the most valuable wood in Canada is found in the forests of the Greater Golden Horseshoe (including maple, black cherry, white ash, and red oak). This wood is commonly used for home furnishing and renovations (furniture, flooring) as well as value-added products such as bowls, paddles, or cutting boards. Southwestern Ontario has greater timber sales than the Greater Golden Horseshoe,[196] partly because of attitudes toward forest management nearer urban centres and the prioritization of preservation over management. In some cases, forest conditions have been degraded by invasive species, over-harvesting or other issues and sustainable management activities could improve their ecological and economic value. The value of private deciduous woodlots in southern Ontario is currently estimated at $1.1 billion,[197] though it is estimated that by improving the condition of forests through Good Forestry Practices (as outlined in Ontario's *Forestry Act*), woodlot value could be increased by $1.1 billion in this region.[198]

Non-timber forest products encompass conifer boughs, wild berries, mushrooms, medicinal and other herbs, and maple syrup and other sap-based products. While the harvesting and sale of many forest goods generates economic output that can be quantified, many are collected for personal use. This makes it difficult to quantify the full scope of the collection and use of these goods. The market value of non-timber forest products in the Greenbelt has been estimated at $1.03 million with an additional $7.26 million in maple syrup production annually (2015 dollars).[199] It is recognized that this is likely an underestimate of the value of these products, but their use is not well documented.



While non-timber forest products are associated with many culturally significant practices, over-harvesting on publicly accessible forest lands is a growing concern of forest managers and we heard concern that in some cases overharvesting is impacting ecological integrity of forests in the GGH. For example, American Ginseng (*Panax quinquefolius*) is a listed endangered plant found in mature forests in the GGH. Among other stressors, the main threat to this species is illegal and improper harvesting. Access to non-timber forest products requires decisions to be made in a local context about the best approach for each forest and community.

Many rural homes in the GGH, including those of the Indigenous Peoples and Communities, rely on firewood for heating. The largest amount of firewood production in southern Ontario occurs on private lands. An estimated 84 per cent of private forest owners in Ontario cut for firewood, mostly for personal use. Invasive forest pests like emerald ash borer have increased the number of trees that need to be removed; these trees are only of value as firewood.[200]

Forests in and around cities in southern Ontario directly support more than 8,700 jobs, not including teachers, artists, therapists, recreational outfitters, and others who rely on nearby forests in their work. Additionally, tens of thousands, if not a million, people in the GGH volunteer for nature conservation.[201] This people power could be strategically harnessed to build a forest conservation economy. Many organizations are already working on forest conservation and stewardship in the GGH. They could be coordinated to support these efforts including:

- Indigenous Peoples and Communities
- Municipalities
- Conservation Authorities
- Federal agencies – Parks Canada, Natural Resources Canada
- Provincial agencies – Ministry of Northern Development, Mines, Natural Resources and Forestry
- Ontario NGOs – Ontario Woodlot Association, Forests Ontario, Ontario Urban Forest Council, Local Enhancement and Appreciation of Forests (LEAF)
- National and international NGOs such as Nature Canada
- Certification bodies such as Forest Stewardship Council
- Agricultural organizations such as Ontario Soil and Crop Improvement Association and Alternative Land Use Services
- Local and community organizations and leaders including those working to improve equity in forest conservation such as Black Outdoors, KinxFolk, and Greenbelt Youth Ambassadors (see Appendix F)
- Businesses with interests in forest stewardship such as Mountain Equipment Company
- Residents and communities

RECOMMENDATION

Conservation organizations, municipalities, Conservation Authorities and partner academics should research the full socioeconomic impact of near-urban forests, including a better understanding of cultural values, goods like maple syrup and firewood, and jobs that rely on but are not necessarily understood to be linked to forests (such as teachers and therapists who work in forests), to help make more informed decisions about the value of forests.

8.6 Knowledge and education

Accessible forests in near-urban areas afford opportunities for education and cross-cultural learning, particularly between Indigenous and non-Indigenous Communities. The COVID-19 pandemic has increased an already high level of interest in outdoor education and forest schools. Forest-based therapy and relationships with forests and nature has also received more attention this year because of the mental well-being benefits they can provide.

In advance of CBD COP15, the Global Youth Biodiversity Network prepared a policy brief for *Transformative Education toward a Life in Harmony with Nature*, which includes the following vision:

1. An education that holistically nurtures connectedness, reciprocity, and kinship to nature
2. An accessible rights-based education that is respectful, inclusive, and celebrates diversity
3. A lifelong education that fosters sustainable, respectful, responsible, proactive, and critical societies
4. An education of high quality, actively supported, and holistic in its approaches

Ensuring that education is culture-rooted, culturally appropriate, and available in Indigenous and local languages is crucial to ensuring that it does not contribute to the erosion of Indigenous and local knowledge."[202]

Initiatives led by and for youth and marginalized communities already exist in the GGH and could be expanded to increase the reach of messaging and more equitable distribution of benefits from forests in the GGH.

8.6.1 Cultural and cross-cultural learning

Natural areas allow opportunities for cross-cultural learning where Indigenous and non-Indigenous Communities can come together to learn about and steward the land. An example of one such initiative is the Conservation through Reconciliation Partnership that builds on the foundations of the *We Rise Together* report and aims to advance Indigenous-led conservation in the spirit of reconciliation and decolonization. The project is bringing together a network of Indigenous and non-Indigenous individuals and organizations across Turtle Island in ethical and collaborative research efforts while increasing capacity among Indigenous Peoples and Communities, the conservation sector, and the public.

Protecting and restoring forest ecosystems is critical to ensuring opportunities for on-the-land learning. Relationships with forests and communities with strong cultural connections to the land can provide opportunities for cross-cultural learning and building understanding between Indigenous and non-Indigenous communities, an important step when practised in the spirit of reconciliation.

Indigenous Communities and peoples benefit the forest conservation economy, including growing, afforesting, accessing, harvesting, and stewarding the land. Some tree species and forest types hold significant cultural value to communities. Through engagement within ethical space, these values can be better understood, and these forest types restored and protected. Indigenous Peoples from across Turtle Island and around the world living in urban areas can meaningfully contribute and benefit from participating in the conservation economy. This begins with meaningful engagement of all Indigenous Peoples throughout the GGH, in accordance with identified protocols.

"Moccasin Identifier at the Ravine" is an effort led by Carolyn King in partnership with Mississaugas of the Credit First Nation and the Greenbelt Foundation, to promote public awareness of significant cultural historic sites and the ancestral presence of First Nations, Métis, and Indigenous Communities on the Toronto waterfront.[203]

The loss or privatization of natural areas affects the rights and cultural well-being of Indigenous Peoples. Protection and restoration of accessible near-urban nature can support continued Indigenous Knowledge and practices.

RECOMMENDATION

Landowners, municipalities, and Conservation Authorities should continue to work with Indigenous Peoples and Communities to support land-based and cross-cultural learning.

8.6.2 Elementary and secondary schools

Forest schools are primarily private schools where tuition fees cover the costs of operations and may support forest conservation activities. Forest schools operated by Conservation Authorities include Ganaraska Forest Centre, Kortright Conservation Centre, and Ball's Falls Centre. Staff interviewed at these centres conveyed that interest in these programs has intensified with the COVID-19 pandemic.

Not just a full-time setting for classes, forests also provide areas for outdoor education and field trips. In 2015, more than 3,000 schools and 421,000 students participated in environmental education programs run by Conservation Authorities, many in local conservation areas.[204]

While the popularity of school board–operated outdoor education centres has waxed and waned, these centres typically serve more urban and affluent communities. There is also a history of racial segregation in these centres, particularly in the first half of the 20th century.[205] These histories and inequities must be addressed, as support and interest in these programs grows, to increase the number of children participating, particularly from communities that have previously been marginalized.

Certain programs in the GGH specifically support nature education for priority neighbourhoods, such as the Weston Environmental Leaders of Tomorrow Program. This program, run by the Toronto and Region Conservation Authority, supports students from priority neighbourhoods who might not otherwise be able to participate in this type of experience. The objective is to use science-based education, outdoor recreation, and team-building to develop connections with nature and leadership skills.

8.6.3 Postsecondary institutions

Several postsecondary schools in Ontario offer programs related directly to the management of forests and trees. Algonquin College, Fleming College, Niagara College, and Humber College offer forest technician or arboricultural programs. University of Toronto and Lakehead University have forestry degree programs. The University of Guelph offers an Indigenous Environmental Science and Practice bachelor degree that involves land-based learning.

Universities in the GGH also steward lands, including the Koffler Scientific Reserve at Joker's Hill in King City, donated to the University of Toronto in 1995. Having forests and other natural areas in the GGH allows for field-based observation and experimentation in ecology, hydrology, and other sciences in addition to offering a setting for arts (such as film-making) and other courses that benefit from a natural setting.

Postsecondary institutions work in partnership on many research projects related to near-urban forests and offer potential partners for forest conservation-based economies.

8.6.4 Knowledge exchange and public education

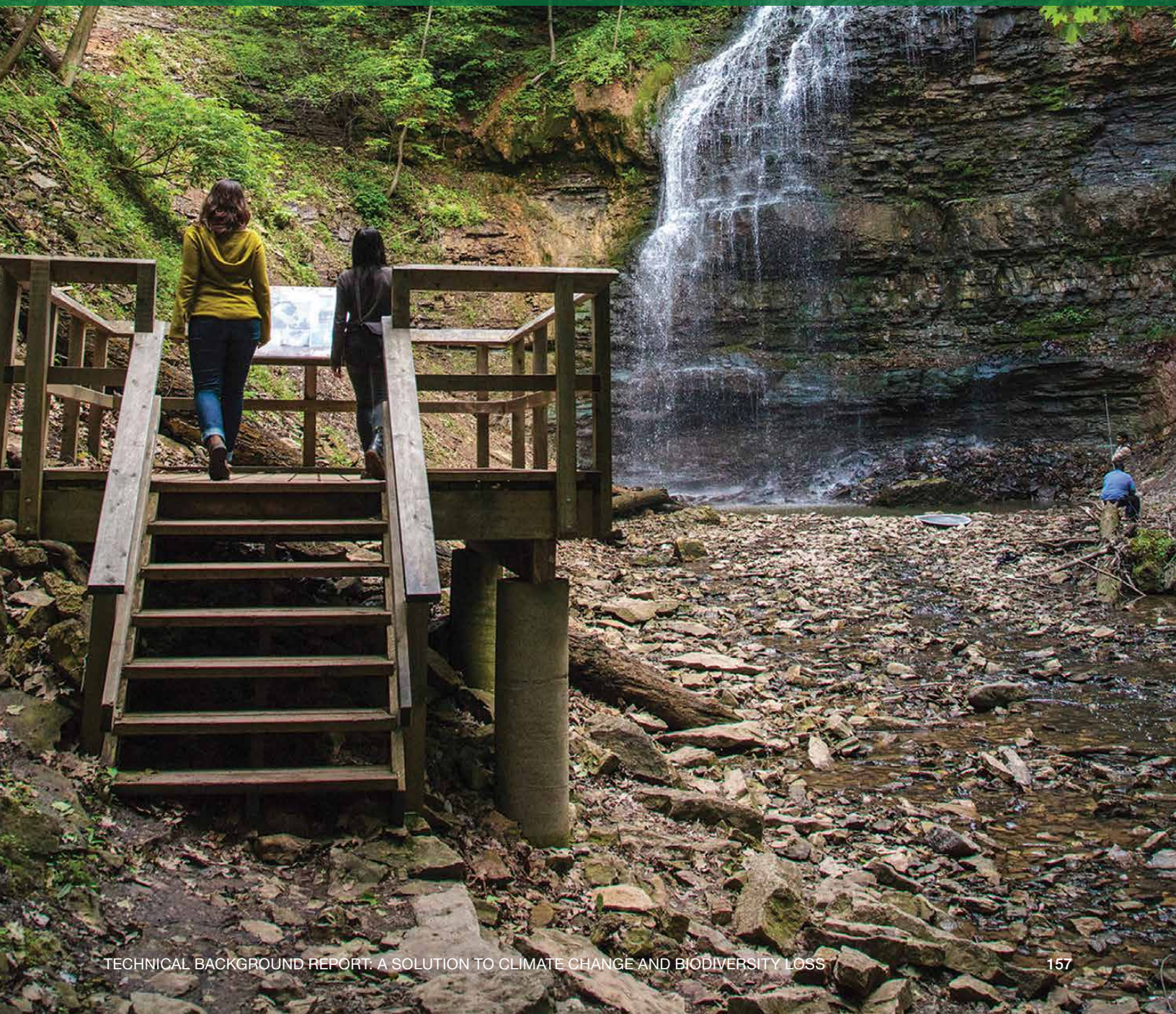
Considerable decision-making power and responsibility for forest conservation falls to municipalities that have varying degrees of capacity and resources. Sharing information across municipalities can help improve conservation overall. Conversations are happening among municipal staff, especially in larger municipalities, but support and capacity for smaller municipalities to enable them to participate in knowledge exchange is needed. This support could be in the form of funding for programs and initiatives or for urban forestry staff positions and capacity. Similar programs run by the Federation of Canadian Municipalities for asset management and climate change planning could be models.

Conservation authorities play an important role in working with municipalities on forest conservation, but also vary in capacity and resources across the region. Where a large Conservation Authority may be able to provide advice from perspectives from staff versed in botany, forestry, ecology, arboriculture, hydrology, education, agriculture, community engagement, and culture, a smaller Conservation Authority may only have one or two staff members knowledgeable in these areas.

Promoting understanding and support for the benefits of forested lands through agricultural extension programs is another opportunity to enhance support for forest conservation while supporting other agricultural objectives. For example, woodlots adjacent to fields, windbreaks/hedgerows between fields are a best management practice that reduces soil erosion and aquatic health while providing economic returns.[206] These practices are already promoted through programs like those supported through the Canadian Agricultural Partnership Program and run by the Ontario Soil and Crop Improvement Association and Conservation Authorities. These programs could be scaled up to increase on-site education.

Supporting knowledge exchange between landowners is another opportunity to enhance knowledge exchange. The Ontario Woodlot Association and Forests Ontario are examples of NGOs that provide this type of programming and education across Ontario. Many municipalities and Conservation Authorities also provide education and outreach programs that could be expanded, particularly in communities with fewer resources.

9. Building blocks for a Near-Urban Nature Network



9.1 Research and information sharing

Many limitations to our understanding of strategic action could be alleviated in part by greater access to information to support more research. This includes information about land ownership and management. Municipal Property Assessment Corporation (MPAC) data would be extremely useful for planning a Near-Urban Nature Network, but access is limited by the high cost. In the GGH, where there is a significant proportion of private lands, this information could help target strategic action and outreach.

The federal government also has a role to play in research and providing accessible environmental information that could support Near-Urban Nature Networks across Canada. Canada's federal budget for 2021 proposes $25.6 million for Statistics Canada and $1.9 million for Environment and Climate Change Canada over five years to create a Census of the Environment to monitor environmental trends and inform decision making.

RECOMMENDATION

Permit and reduce the costs of data sharing between MPAC and other government agencies and their conservation charity partners.[207] This change would expedite and streamline property information use for stewardship and securement programs and avoid time-consuming and costly research on land parcels to deliver government programs related to private land protected areas.

9.2 Collaboration, outreach, and participatory decision making

"The creation and funding of the Oak Ridges Moraine Foundation and the Greenbelt Foundation has advanced public and political understanding of the importance of these special landscapes and waterscapes. This has increased support by the public, landowners, and the agricultural sector. For example, in 2021 more than 90% of polled Ontarians strongly supported the Greenbelt initiative."[208]

Thousands of people work in conservation in the GGH. Developing a shared vision for the region among some, if not all, of these groups holds potential for scaling up efforts to create a more resilient Near-Urban Nature Network in the GGH. Coordination by a group like the Southern Ontario Nature Coalition could help the larger community develop the vision, build capacity, mobilize action, and establish opportunities for knowledge sharing.

The importance of knowledge-sharing, coalition-building, education, and outreach came up repeatedly throughout the work of the SONC partnership. Specific audiences to engage include communities who have been marginalized, children and youth, and seniors. Presented here are the findings of our collective efforts to date, which we hope will spark interest and engagement for continued and new partnerships.

Participatory planning tools can be used to support the Near-Urban Nature Network in outreach, engagement, and decision making (through, for example, democratic processes at the local level). Examples of tools that support transparent decision making are exist to support planning and decision making related to the benefits from nature, for example:

- Completing and Using Ecosystem Service Assessment for Decision-Making: An Interdisciplinary Toolkit for Managers and Analysts[209]
- American Forests Tree Equity Score tool[210]
- Public Health Ontario's Social Determinants of Health Snapshot[211]

Having a longer project window, especially for the project scoping phase, can help create space for meaningful collaboration. Legitimate engagement moves beyond consultation. Three criteria characterize legitimate deliberations and engagement:

1. **Inclusive**: all those affected by a decision have a voice in the process, especially Indigenous Peoples.
2. **Authentic**: opportunity is provided to reflect on preferences, free from manipulation and coercion.
3. **Consequential**: the output of participation will have a measurable influence on the outcome of a project (not just a token engagement).[212]

RECOMMENDATION

The federal government should provide additional guidance and support for participatory and deliberative planning practices that can support decision making for biodiversity and ecosystem services in complex near-urban landscapes across Canada as recommended in Canada's *Completing and Using Ecosystem Service Assessment for Decision-Making: An Interdisciplinary Toolkit for Managers and Analysts* (page 144).

9.3 Equity, justice, and access to nature

"Providing access to nature for people in urban areas is really important for mental health but also builds that 'love-what-you-know' connection to nature. Most Near-Urban natural areas need to have reasonable access for as many people as possible."

WENDY CRIDLAND, NATURE CONSERVANCY OF CANADA

Our surveys found that 64 per cent of conservation organizations and experts and 51 per cent of land stewards believe that access to nature is not equitable, and that not all people necessarily feel welcome in natural spaces. Survey respondents were also asked about the extent to which the near-urban nature strategy should contribute to more equitable access to nature. The majority of respondents (59 per cent of conservation organizations and experts and 50 per cent of land stewards) indicated "a great deal."

These findings were echoed in our interviews and workshops. Messages about the importance and strength of diversity in the GGH resonated with workshop participants. This diversity includes natural diversity in terms of biodiversity, habitats, and landforms, and human diversity in terms of cultures, races, and ethnicities.

Intergenerational justice

The Global Youth Biodiversity Network has outlined three key demands for translating intergenerational equity within the Post-2020 biodiversity framework:

1. Current generations need to consider future generations and resources;
2. Future generations should not suffer because current generations were unable to act on the planetary crisis, protect the environment, and manage resources sustainably;
3. Fairness and justice should be maintained between all generations[213].

Access to the benefits that nature provides is an issue of environmental justice. Marginalized communities and communities of colour often live in neighbourhoods that have less natural cover and fewer parks. In addition to having fewer opportunities for recreation, these disparities put them at greater risk of impacts from a changing climate. For example, people having to live in neighbourhoods with little nature are experiencing hotter environments because of the urban heat island effect. This environmental injustice compounds economic risk factors like poverty that precludes the use of air conditioning and social risk factors like social isolation that can be worsened by a lack of access to safe and welcoming parks.

According to Public Health Ontario's Social Determinants of Health web map, urban centres tend to have larger populations that rank high on the marginalization index (an indicator of poverty) and "ethnic concentration," defined as area-level concentrations of recent immigrants and people belonging to a "visible minority" group (defined by Statistics Canada as "persons, other than aboriginal peoples, who are non-Caucasian in race or non-white in colour").

Historic and ongoing issues of systemic discrimination and unequitable access to nature go beyond the physical distribution of nature and can include race and culturally based barriers, for example, the avoidance of natural areas for justified fears of violence and policing. Racist attacks in natural spaces in recent years include attacks on Asian Canadian anglers in southern Ontario.[214] Similar violence is often faced by Indigenous People exercising their rights, as was the recent case with Mi'kmaq fishers on Canada's east coast.

The Greenbelt Foundation has also documented in recent reports how some people in the Black and New Canadian communities have expressed that some activities like hiking in natural spaces can be perceived as "white."[215] These trends highlight the need to support and amplify community-led interventions to improve access to and inclusivity with nature, therefore improving nature's contributions to people, the value of nature to the entire population, and quality of life in the region.

Increasing environmental justice in the GGH will require increasing access to, removing barriers from, and increasing the distribution of natural spaces across the landscape. But first, it will require vision and buy-in from communities about how they want their communities to be, preferably developed in a deliberative process that makes planning more democratic. In all cases, decisions about the land without the leadership of Indigenous Communities can perpetuate colonial systems. Leadership by Indigenous Peoples and their rights must be supported in all-natural system planning, including in more urban areas where people are increasingly disconnected from nature and where the majority of Indigenous Peoples reside.

"From 2020, ensure equitable **participation and support capacity in decision-making related to biodiversity**, and ensure rights over relevant resources of Indigenous peoples and local communities, women and girls as well as youth, in accordance with national circumstances."

IUCN[216]

C40 Mayors have a collection of resources for a Green and Just Recovery to COVID-19 with nine principles to improve resiliency, public health, sustainability, and equity. This includes ensuring that recovery improves the resilience of cities and communities and that national governments support urban areas in these efforts.

Parks Canada's 2017 *Parks for All: An Action Plan for Canada's Parks Community* rests on the following principles:

- Nature, including intact, robust ecosystems, is required for our continued survival and livelihood and that of all other species.
- Connected, healthy parks are better for people, plants, and animals.
- Connecting with Nature begins a relationship that can lead to support for the conservation of Nature.
- Parks are places where Nature can thrive, and humans can connect with the land.
- Connecting with Nature is good for Canadians, for personal, community, and societal enrichment.

Among the many relevant near-urban nature relevant objectives in this action plan are:

- a framework that encourages parks at all levels to strengthen relationships with Indigenous Peoples, leading to actions built on the basic and effective principles of reciprocity: gratitude, respect, and generosity
- an integrated urban park system strategy for Canada, drawing connections and relationships across the parks community
- social equity, diversity, and inclusion in staffing and leadership across the parks community

Appendix F lists examples of initiatives led by and for marginalized communities working at various scales to break social barriers to access to nature in the GGH and Canada. A helpful resource from a group led by Jay Pitter at York University, *Engaging Black People and Power: A Public Engagement and Urban Policy Primer*, was created for policy-makers in government or non-governmental organizations who are in a position to influence policy development and resource allocation as well as urbanism practitioners who are involved in planning, development, and community engagement.

The report begins with an opening that identifies

> ***the act of equitable placemaking is a radical act of collaboration and on-going process of knowing when to lead, cede space, listen deeply and ask courageous questions. It is not strictly a professional pursuit but rather purpose rooted in a commitment to on-going professional and character development.***

This report refers to green infrastructure and inequitable access to green space. These are just some of the resources and organizations working in this area to make nature's benefits more equitable. Making space is important, but listening, providing compensation for work performed, and being open to learning and changing are very important.

RECOMMENDATION

Organizations and governments should continually review their communications and signage to inclusive and diverse language and visuals that make everyone feel welcome in nature.

9.4 Natural asset management

Across Canada, municipalities are starting to incorporate natural assets into their municipal asset management plans. Under O. Reg. 588/17, municipalities in Ontario are required to include natural or green infrastructure assets in their municipal asset management policies and plans. This provision can increase awareness of the value of near-urban nature and help municipalities better plan for it over the long term. Other land stewards (e.g., Conservation Authorities) should be taking a similar long-term budgeting and management approach, but they will need financial support to do so.

The Municipal Natural Assets Initiative (MNAI) of the Smart Prosperity Institute[217] provides local governments with tools to identify and account for natural assets at the community level, as well as the best practice guidelines to assist governments in saving costs while also delivering services more efficiently and adapting to climate change. MNAI has worked with the Town of Oakville and the City of Oshawa on natural asset management and is now working with several other municipalities in the GGH to inventory municipal natural assets.

Municipalities and Conservation Authorities are also showing leadership. York Region was the first municipality in Ontario to include green infrastructure assets in its asset management plan. The asset management plan includes inventory, current condition, identified risk, levels of service, and long-term financial planning for trees and woodlands on municipal lands. This process helped secure a budget for forest stewardship.

For example, the Town of Halton Hills is currently working with Credit Valley Conservation to develop a thorough understanding of the levels of service provided by natural assets in the Town.

In many cases, Conservation Authorities support partner municipalities on natural asset management planning for municipal assets. However, Conservation Authorities themselves are large owners and managers of natural assets and could benefit from resources and support to undertake similar long-term and adaptive management planning for the many natural assets they manage.

Developing natural asset management understanding and approaches in Canada will help position communities for changes that are happening on a global scale in economic accounting of natural assets. In March 2021, the United Nations adopted a framework to integrate natural capital in economic reporting.[218] This global shift may finally force national and international financial systems to stop treating nature as external to the economy. This reporting framework is, however, very high level. Although Canada reports on natural asset accounts, these accounts are not comprehensive nor incorporated and reported in the way other assets are. Nevertheless, governments across Canada are beginning to account for the value of nature through municipal natural asset initiatives.

9.5 Financing tools

The benefits of a Near-Urban Nature Network are far reaching and provide immense public amenity value and economic benefit in the form of goods and services that save on government costs related to health care, natural hazards, and more. Furthermore, governments at all levels have made commitments to protect biodiversity, natural systems, adapt to climate change, and ensure good land use planning at all levels of government.

According to a recent report by the Canadian Institute for Climate Choices, since 2010, the costs of weather-related disasters and catastrophic events have amounted to about 5 to 6 per cent of Canada's annual GDP growth, up from an average of 1 per cent in previous decades.[219] These costs will impact all levels of government as well as organizations and people across Canada. The need for nature-based climate solutions to help mitigate and adapt to climate change is only going to grow with time and all sectors must start increasing investments in these solutions which provide climate resilience and a suite of co-benefits.

Public funding is critical as natural systems require long-term commitment and investment that private and philanthropic sectors do not provide. Funding for conservation from federal and provincial sources can include:

- Institutional budget allocations to the public agencies and authorities responsible for implementing near-urban nature projects or managing land, resources and services upon which they depend (for example Environment and Climate Change Canada projects related to tools and resources or land managers or direct management of national parks).
- Direct investment in near-urban nature protection (e.g., land securement) or restoration (e.g. the proposed federal Natural Infrastructure Fund, Canadian Agri-Environmental Strategy, Natural Climate Solutions for Agriculture Fund); these grant programs should require multi co-benefit outcomes related to biodiversity, climate resilience, community needs, and cultural values.
- Environmental fiscal reforms as part of crisis recovery plans including COVID-19 economic recovery plans to realign incentives with sustainable practices (e.g., the European Green Deal).
- Subsidies to reduce costs to private near-urban nature projects (e.g., tax incentives).

Other sectors can also contribute to a Near-Urban Nature Network for the social, economic, and ecological benefits it can provide.

- **Philanthropic and private investments** can help with testing of new ideas, approaches, demonstrations, and identifying best practices. These can range from large corporate sponsorships to private donations and crowdfunding.
- **Market-based instruments** include payments for ecosystem services from local authorities or businesses that rely on large-scale availability of ecosystem services like water use.
- **Insurance products** can support upstream restoration.
- **Conservation impact bonds** can boost climate-smart natural capital, save wildlife and grow healthy landscapes in the traditional territories.

The Deshkan Ziibi Conservation Impact Bond (DZCIB) was launched in March 2020 by the Chippewas of the Thames First Nation. Lead partners include Carolinian Canada, VERGE Capital, Thames Talbot Land Trust, Ivey Business School, 3M, ALUS, Lower Thames Conservation Authority, Pollinator Partnership and ReForest London, connecting more than sic communities, 20 partners, and 45 landowners. Phase 1 involves improving 60 hectares with high-quality habitat for agriculture, recreation, tourism, business, and cultural benefits. The model connects five sectors for a healthy landscape portfolio, including protection, stewardship, restoration, and leadership for healthy habitat. Early results show that the conservation bond approach can leverage collaboration, understanding, investment, innovation, and funding. Phase 1 is the first step towards a goal of improving 1000+ hectares for thriving resilient communities. This initiative has been called “an excellent example of Canadian leadership in pay-for-success models.”[220]

Photo: Noah Cole

Potential Pan-Canadian Relevance

Ontario's Greenbelt and Growth Plans for the GGH are a unique approach which could provide some helpful approaches for peri-urban planning elsewhere that protects natural and agricultural lands. Additionally, the model of having a government-support foundation like the Greenbelt Foundation has proven very successful in supporting the vision and intent of these land use plans and tremendous effort to build and sustain stakeholder and public support.

Near-Urban Nature Networks offer opportunities to address multiple government priorities using a whole-of-government approach that reduces siloed initiatives among departments.

To achieve biodiversity at the federal level, sustainable development and climate change adaptation goals, more Pan-Canadian dialogues and knowledge sharing are needed between urban regions. Many innovative solutions can be found across Canada related to the protection and restoration of nature in a near-urban context. In some cases, the federal government can play a leading role, as in establishing urban national parks. In other cases, it can support knowledge exchange, strategic direction, and research, for example, through a native seed strategy and knowledge exchange around near-urban ecological corridors.

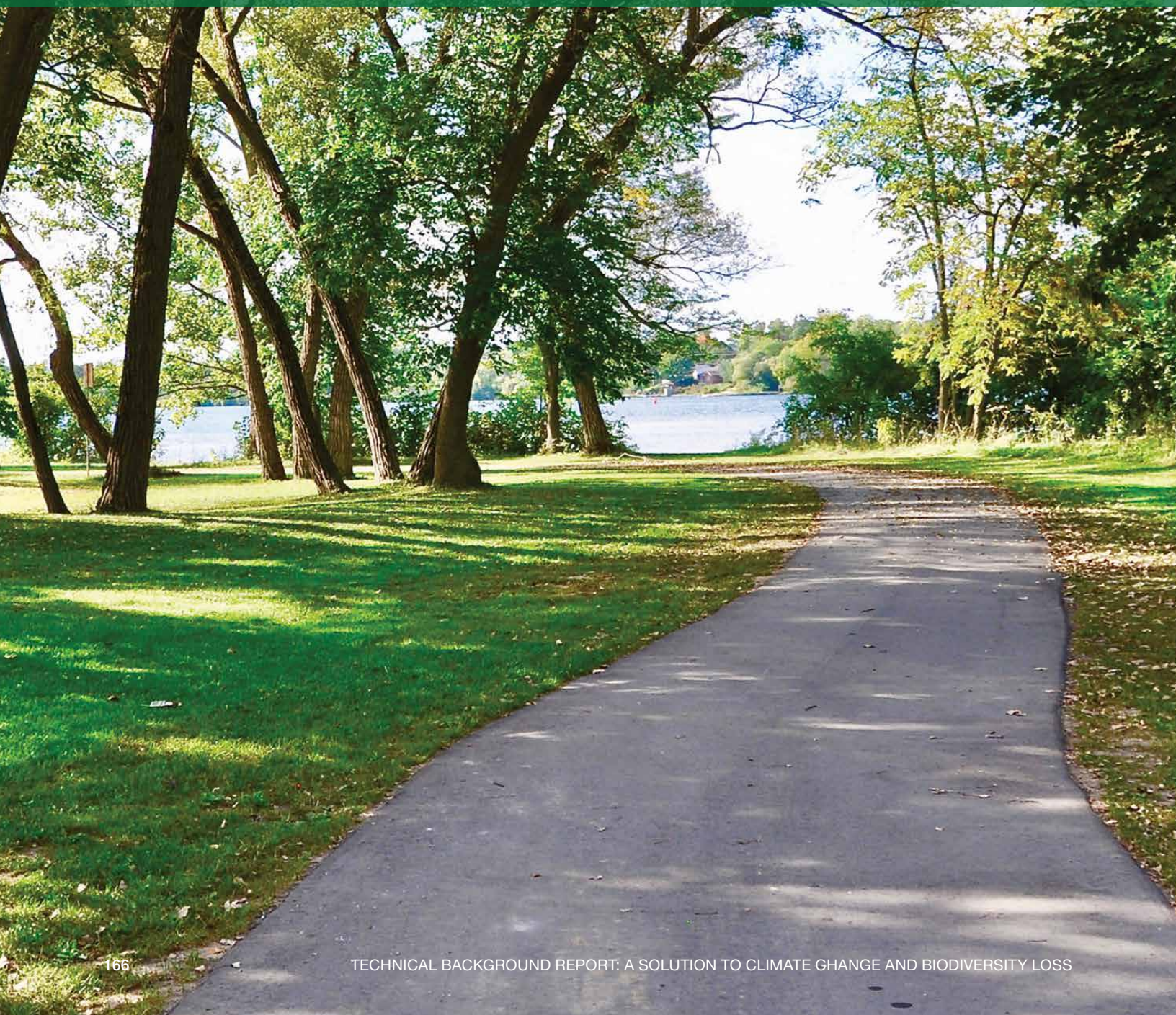
Provincial and municipal governments and non-governmental organizations can also play a role in pan-Canadian efforts. An example of a successful innovation shared across Canada are Municipal Biodiversity Funds, started by CPAWS Quebec chapter (SNAP) and the Quebec Wildlife Foundation. Municipalities contribute funds ($1 per household in Quebec) that are used for conservation in those municipalities in cooperation with local groups. The Province of Quebec has contributed an additional $1.8 million to this fund. This model was expanded with CPAWS chapters and is now in place in Halifax, Saskatoon, and Whitehorse.

The GGH is home to the Rouge National Urban Park, Canada's only urban national park. The success of the Rouge could be replicated in other interested communities across Canada. There is current interest in establishing urban national parks in Halifax, Gatineau, Windsor, Saskatoon, and Vancouver.

A pan-Canadian effort focused on connectivity and other priorities for Near-Urban Nature Networks could help identify areas of federal priority around ecological corridor protection.

The Government of Canada has many ongoing and new programs and initiatives that could support Near-Urban Nature Networks, including Canada's National Adaption Strategy, Canada Nature Fund, Natural Infrastructure Fund, Canadian Agri-Environmental Strategy, Natural Climate Solutions for Agriculture Fund, the two billion trees program, and Health Canada's *Health of Canadians in a Changing Climate: Advancing our Knowledge for Action* report. These initiatives are led by several different departments that have different mandates and primary objectives. Taking a strategic and regional approach to Near-Urban Nature Networks could help achieve the multi-solutions needed in a near-urban context.

10. Summary of Recommendations



10.1 The Path Forward

Ongoing support for the Southern Ontario Nature Coalition (SONC) is needed to continue coordinated and collaborative efforts to develop and implement actions related to the regional vision of a Near-Urban Nature Network in Ontario's Greater Golden Horseshoe. This will include continuing to communicate and build on the findings and share insights with similar regions across Canada. Future work will help Canada to deliver on global biodiversity and climate adaptation commitments.

The project's resources are at an end and must be extended and expanded to continue.

10.2 Recommendations for the Southern Ontario Nature Coalition

SONC outlines an immediate path forward for the region. Resources needed to undertake this work are estimated at $10 million over 2-years:

- Continue to **engage interested local Indigenous Communities** in accordance with community protocols and the development of Ethical Space.
- Communicate the vision and importance of the Near-Urban Nature Network for Canada and Southern Ontario and build on the model of the Greenbelt and findings of this project, including continuing in-depth **assessment of areas of importance for protecting**, connecting, and restoring land for:
  - ecology: key biodiversity areas and areas of local significance; areas integral to regional connectivity
  - culture: Indigenous biocultural mapping
  - society: communities vulnerable to climate change impacts
- Support outreach and engagement activities and the development of tools and resources to **accelerate opportunities to establish protected and conserved areas** in Ontario's Greater Golden Horseshoe (GGH), including Other Environmental Conservation Measures (OECMs) and Indigenous Protected and Conserved Areas (IPCAs) and contribute towards Canada achieving its targets of 25 per cent protection of lands and waters by 2025 and setting the stage for 30 per cent protection by 2030.
- Identify opportunities for regional planning to improve access to greenspace for residents.
- Lead significant **ecosystem restoration actions** in the region and investments in natural infrastructure by:
  - Partnering with the Government of Canada in implementing the Two Billion Tree Commitment, including strategic planning and collaboration to identify priorities and monitoring needs;
  - Developing tools and resources to increase biodiversity and climate resilience stewardship outcomes among agricultural and private landowners including Forest Stewardship Council (FSC) Certification and promoting woodlot economies.
- Launch a **Native Plant Seed Strategy Pilot** for seed zones associated with the Greater Golden Horseshoe (GGH), and in collaboration with Indigenous Communities.
- Continue **pan-Canadian conversations** to advance the protection of nature and people's connection to nature, in urban areas.

10.3 Engaging Indigenous Peoples

Engagement may include creating opportunities for **Communities to apply collectively for funding** if they choose, supporting jobs in Communities through Canada Jobs, and providing grants and funding for engagement. In addition to federal programs, other governments and community organizations can fund engagement and support economic development related to the restoration economy, such as growing and selling native plants from Indigenous-led initiatives and creating opportunities for Indigenous Communities to provide capacity building within the greater public in regard to Natural Law and conservation from an Indigenous lens

Activities that are currently happening and could be scaled up in the region include:

- First Nation Communities may choose to identify Community Members who should be involved and **coordinate knowledge documentation and sharing** according to protocols.
- Indigenous **Knowledge Holders and Elders may be encouraged to participate** in engagements and share their knowledge and time.
- Indigenous Communities/Peoples may wish to contribute to **biocultural mapping** of values and uses in the Greater Golden Horseshoe.

10.4 Recommendations for federal and provincial governments

Canada's federal and provincial governments have made bold commitments to address the dual crisis of biodiversity and climate change through collaborative approaches that maximize conservation outcomes. To meet these commitments globally and at home, governments need a meaningful national strategy for urban areas, focused on protecting and restoring ecological cores and corridors critical to supporting biodiversity, investments in natural infrastructure, and improving access to nature and green space for residents.

The federal and provincial governments should also increase their support for climate adaptation planning using nature-based solutions that deliver on biodiversity as well as social and cultural outcomes and scale up research on nature-based solutions for flood and heat vulnerability to support adaptation planning across the region.

10.4.1 Federal government

Continue to **support the work of SONC in realizing a Near-Urban Nature Network** and implement next steps as outlined in Path Forward, above. Provide funding for capacity to interested Indigenous Peoples and Communities so that they may participate in near-urban nature protection and exercise their responsibility to care for the land and waters and continue cultural traditions and ways of life

Integrate urban and near-urban nature network objectives into national biodiversity, climate change adaptation, and agricultural policies and programs, including commitments and efforts coming out of the Convention on Biological Diversity (including COP15), Canada's National Adaption Strategy, Canada Nature Fund, Natural Infrastructure Fund, Canadian Agri-Environmental Strategy, Natural Climate Solutions for Agriculture Fund, the two billion trees program and Health Canada's *Health of Canadians in a Changing Climate: Advancing our Knowledge for Action* report.

Assess opportunities to **expand Rouge National Urban Park** and expand the National Urban Parks model by assessing lands in near-urban regions, including other federal lands that could contribute to ecological cores and corridors across Near-Urban landscapes and the greater park ecosystems.

Develop national **guidance and standards** to designate important ecological corridors and priority regions based on the IUCN's guidelines for conserving connectivity through ecological networks and corridors and CCEA's recommendations in Implementing Connectivity Conservation in Canada including integrating biodiversity considerations in Environmental Assessment processes.

Work with the United States on ecological connectivity and continue efforts through **Great Lakes Water Quality Agreement** to improve terrestrial and aquatic habitats and water quality.

Form a **working group** to assess if and how to establish designations for important ecological corridors following the IUCN guidance, starting with municipal, Conservation Authority, and unceded (Crown) lands.

Provide funding to support the development of a **national native seed strategy** similar to the U.S. National Seed Strategy.

Support, with the help of Parks Canada, IUCN's #Nature for All and other programs to **connect people with nature in Canada**, while promoting greater focus on urban and near-urban nature through these programs.

Demonstrate and support **leadership in conservation finance** to model and scale up Resilience and/or Conservation Bonds to finance restoration and reduce climate vulnerabilities through natural infrastructure.

Provide additional guidance and support for participatory and deliberative planning practices that can support decision making for on biodiversity and ecosystem services in complex near-urban landscapes across Canada as recommended in Canada's *Completing and Using Ecosystem Service Assessment for Decision-Making: An Interdisciplinary Toolkit for Managers and Analysts* (page 144).

10.4.2 Provincial government

Continue to undertake and support **assessments of potential protected and conserved** areas including OECMs and IPCAs. Use interim protection mechanisms and report on interim or candidate areas.

Develop **land use or resource management policy** that applies to all PWAs and PSWs on unceded (Crown) land through the Public Lands Act to allow more of these areas to meet Canada's Target 1 criteria.

As part of its review of laws, regulations, and policies to strengthen wetland protection, the Ontario government should consider:

- Amending the PPS to require that **wetland evaluation occur before development approvals are granted** and all wetlands are deemed to be significant until an evaluation demonstrates otherwise.
- Repealing amendments to the Planning Act enacted in 2020 so that the power to deny development approvals on PSWs is fully restored to Conservation Authorities.

  Re-establish the original vision for **ANSIs** which were intended to complement the Provincial Parks program and protect areas of provincial, regional or local significance. Make candidate ANSIs full ANSIs.

Continue to **create protected and conserved areas** where lands meet the criteria, starting with unceded (Crown) land and lands in close proximity to existing protected and conserved areas.

Explore opportunity under the Great Lakes Protection Act to **enhance protection for PSWs** which could include regulating PSWs under the Act.

Protect agricultural land from development by encouraging and funding the use of easements, soil health practices, and strategic restoration on agricultural lands.

Invest in **local stewardship programs** with objectives that support connected and restored landscapes in near-urban areas.

Improve **property tax incentives** by streamlining administration and reducing costs in the operation of the Conservation Land Tax Incentive Program (CLTIP) and the Managed Forest Tax Incentive Program (MFTIP).

10.5 Broader Community Calls to Action

To protect, connect, and restore a Near-Urban Nature Network for all the ecological, climate resilience, social, and cultural benefits it will provide requires collaborative efforts and community support from municipalities, Conservation Authorities, land stewards (owners and managers), the agricultural community, planners, engineers, and public health professionals. These efforts will build on the many existing and successful demonstrations of leadership for near-urban nature present throughout the region.

10.5.1 Protecting Near-Urban Nature Networks

What	How	Who
Continue to strengthen protection for natural areas including all cores and corridors with a long-term vision of increasing protected and conserved areas to contribute to Canada's Target 1 through strategic restoration and protection of connectivity and ecological, social, and cultural values.	Assess Environmentally Significant Areas (ESAs), Provincially Significant Wetlands (PSWs), large conservation areas, parklands, forests, and other important areas for eligibility to contribute to Canada's Target 1. Identify existing gaps (e.g., management plans, restoration plans, forest conservation bylaws) and increase protection.	Municipal and Conservation Authority Planners
Further incorporate biodiversity considerations throughout municipal policy.	When updating municipal policies, include biodiversity in a similar way to that in which climate change considerations are now being considered.	Municipalities
Improve permeability and connectivity of all land uses (i.e., not just existing natural heritage system boundaries) by increasing the wildlife and ecosystem service considerations across the landscape.	Improve consideration of connectivity, management timing, and increased presence of native plants. Apply best management practices that support sensitive species in critical time windows, identify and protect corridors with landowners, use soil health practices, and diversify tree plantings.	Agricultural, woodlot, stormwater management, natural infrastructure and urban forestry programs
Mitigate and reduce fragmentation impacts to the greatest extent possible from roads, rail, or hydro corridors.	Plan to limit fragmentation to the greatest extend possible, using effective wildlife crossings and/or directional fencing, and restoring connectivity through routine maintenance and upgrades.	Infrastructure (utility and transit) planners and engineers
Continue to engage with Indigenous Peoples and the general public to explore opportunities for community science, voluntary landowner programs, and coalitions to protect ecological corridors.	Undertake outreach and support for establishing seasonal corridors across agricultural lands or forming partnerships.	Institutions, Conservation Authorities, and municipalities

10.5.2 Restore and build climate resilience

What	How	Who
Centre nature-based solutions in all climate adaptation planning at all levels of government, including the federal government's upcoming Climate Change Adaptation Plan and any adaptation planning resulting from Ontario's current Climate Change Impact Assessment.	Make protection of existing natural infrastructure central to all climate adaptation strategies. Beyond reducing climate risk, these programs should include co-benefits to biodiversity, culture, and public health. This includes supporting research on flood and heat risks in near-urban regions across Canada.	All governments
Coordinate efforts toward achieving a target of at least 30% forest cover across the region. There is room for at least 54 million more native trees to achieve 30% forest cover in the GGH.	Build capacity to grow more native trees locally, identify priority areas for restoration in a participatory process, with outreach to and the engagement of landowners.	All governments, Conservation Authorities, conservation, and afforestation organizations
Identify risks to the natural functions of ecosystems associated with climate change impacts and ensure that near-urban nature network planning incorporates climate modelling.	Undertake vulnerability assessments of natural heritage systems and update climate adaptation plans as knowledge advances.	Municipalities
Assess the potential benefit of forest and tree protection bylaws for climate adaptation needs as well as social and cultural values.	Explore opportunities with Indigenous Peoples and Communities, farmers, and residents.	Municipalities in the GGH that do not have forest or tree protection bylaws

Photo: Laura Komadina

10.5.3 Support human health and access to green space

What	How	Who
Incorporate health and well-being benefits and access to green space into conservation and park planning at all scales.	Improve access to existing natural areas and new naturalized parks, including linear and other innovative parks in urban cores. Undertake regionally coordinated efforts to address current gaps in large park planning. Share knowledge and increase collaboration to incorporate a broader spectrum of cultures, worldview, and languages. Enhance overall communications and signage to promote inclusive language and visuals that make everyone feel welcome in nature.	Park planners, Conservation Authorities, land trusts and conservation organizations
Identify the health values of conservation projects to build the case for investment	Use guidance such as EcoHealth Ontario's Conceptual Framework to Understand the Business Case for EcoHealth in Ontario to evaluate the health benefits of protecting and restoring near-urban nature to build the case for investment.	Municipalities and Conservation Authorities
Build neighbourhood-scale connections to meet biodiversity and climate change adaptation objectives	Develop neighbourhood-scale community sustainability plans such as the Sustainable Neighbourhood Action Plans in priority neighbourhoods	Municipalities and Conservation Authorities

10.5.4 Enable nature-based economies

What	How	Who
Collectively develop a seed strategy for the region that will support local green jobs, trade and economies	Establish knowledge networks for native plants, including seed conservation orchards, collaborative voluntary standards and labelling, guidelines and forecasting to support GGH-wide planting targets, connect supply and demand of seeds and plants, and track seed sources and expand training and certification programs that focus on the propagation of native species as well as build job skills and sector capacity for all aspects of native plant economy.	All levels of government, Conservation Authorities and conservation organizations
Coordinate efforts to fill information gaps in local nature-based economies	Collect and share information about the proportion of native plants grown and sold and the value of goods collected from natural areas (e.g., non-timber forest products) not currently captured in Statistics Canada, OMAFRA, or municipal tracking.	All levels of government

10.5.5 Recognize rights, public participation, equity, and inclusion

What	How	Who
Continue to build internal understanding of Treaty rights and obligations and uphold these rights in all near-urban nature activities.	Non-Indigenous organizations should implement training for staff on Treaty and Indigenous rights tailored to the lands in which they are working.	All governments and organizations
Work towards more participatory methods of planning, monitoring and managing Near-Urban nature networks to improve conservation outcomes, build a sense of ownership and achieve more equitable outcomes.	Co-design outreach strategies and programs with Indigenous Peoples, rural communities, and farmers to show respect and understanding of Indigenous, farmer, and rural relationships with land. Existing approaches and tools like Indigenous Guardians programs and community science can be used to increase understanding and conservation of ecological corridors.	All governments and organizations
Expand outreach approaches that incorporate a broader spectrum of cultures, worldviews, and languages in environmental and conservation programs,	Use storytelling to help residents develop a sense of place in the GGH. Review communications and signage to promote inclusive language and visuals that make everyone feel welcome in nature.	Municipalities and Conservation Authorities

10.5.6 Support research, education, and information-sharing

What	How	Who
Make property ownership (i.e. public/ private) information publicly available	Use open data initiatives to support research and conservation planning efforts.	Municipalities and Conservation Authorities
Where applicable, identify movement corridors at local and watershed scales by functional group and solutions at appropriate scales to improve connectivity and protect key corridors.	Identify areas of high ecological, social, or cultural importance and work with local and Indigenous Communities and existing natural heritage system and plans.	Municipalities and Conservation Authorities
Continue to undertake research on the impact of roads and other barriers on ecological connectivity to inform restoration and mitigation efforts.	Build on existing examples of local projects in the GGH by testing, observing, and adapting new methods of reducing road mortality.	Government transport departments, Conservation Authorities, conservation organizations, and academics
Build eco-literacy and "nature watch" networks and neighbourhoods with community science	Promote successful models and programs like the Ontario Reptile & Amphibian Atlas, eBird, and iNaturalist through voluntary programs to create a better picture of biodiversity across entire landscapes, including private lands. Conduct outreach to urban community groups to help build understanding about biodiversity across the region.	Conservation organizations, Conservation Authorities, businesses
Develop shared impact frameworks and metrics and share resources to build nature norms and best practices for greater long-term resiliency and efficiency in managing land trusts.	Use protected and conserved areas as a model and hub for voluntary action and as centres of stewardship excellence.	Public and private landowners
Conduct research on the full socioeconomic impact of near-urban forests to support informed decision making about the value of forests.	Improve understanding of the values represented by goods such as maple syrup and firewood, and jobs that rely on but are not necessarily understood to be linked to forests (such as teachers and therapists)	All governments and organizations, partner academics
Work with Indigenous Peoples and Communities to support land-based and cross-cultural learning.	Within the framework of ethical space, engage with interested Indigenous Peoples and Communities about potential cross-cultural learning opportunities. Determine opportunities for funding land-based learning and engagement. Continue to educate staff and entire organizations on Indigenous and Treaty Rights.	Landowners, municipalities, and Conservation Authorities
Expedite and streamline property information use for stewardship and securement programs and avoid time-consuming and costly research on land parcels to deliver government programs related to private land protected areas.	Enable MPAC data sharing to permit and reduce the costs of data sharing between MPAC and other government agencies and their conservation charity partners (such as land trusts).	MPAC, municipalities, Province of Ontario

Appendices

Appendix A: SONC partners

Cambium Indigenous Professional Services
Professional and technical consultants with experience in consultations with Indigenous groups
www.indigenousaware.com

Carolinian Canada
"A network of leaders growing a green future with healthy landscapes in the spirit and practice of reconciliation. We connect science, culture and business to advance a strategic 'Big Picture' vision for climate-smart habitat for 14 UN Sustainable Development Goals, one-third of the country's wildlife, one-fifth of the world's freshwater and way of life for one-quarter of Canadians."
caroliniancanada.ca

Cootes to Escarpment EcoPark System
A voluntary park alliance of nine local government and non-profit organizations in the Burlington-Hamilton area. Collectively the partner organizations own or manage almost 1,900 hectares (4,700 acres) of natural lands designated as part of the EcoPark System. They collaborate to protect, connect, and restore these lands, and deliver sustainable recreation and education opportunities, while individually managing their own properties.
www.cootestoescarpmentpark.ca/about-us

Greenbelt Foundation
"Stewards Ontario's Greenbelt, two million acres of protected land that provide clean air, fresh water, climate resilience, and a reliable local food source to help Ontario thrive. The Greenbelt Foundation is dedicated to ensuring the Greenbelt remains permanent, protected and prosperous."
www.greenbelt.ca

Ontario Farmland Trust (OFT)
Works with farmers, government, and conservation partners to establish legally binding Farmland Easement Agreements that permanently protect farmlands for agricultural and conservation purposes.
ontariofarmlandtrust.ca

Ontario Land Trust Alliance (OLTA)
"A registered charity focused on providing community, knowledge sharing and support to land trusts and other groups committed to land conservation across Ontario…Ontario Land Trust Alliance's local land trust members collectively own and care for over 100,000 acres across Ontario, engaging the support of thousands of volunteers and supporters annually."
olta.ca

Ontario Nature
"Ontario Nature is a conservation organization that protects wild species and spaces through conservation, education and public engagement. A registered charity, Ontario Nature represents more than 30,000 members and supporters, and more than 150 member groups from across Ontario."
ontarionature.org

Wildlands League
"One of Canada's pre-eminent conservation organizations. We protect wilderness. We collaborate with communities, governments, First Nations, scientists and progressive industry to protect nature and find solutions that work for the planet and for all. We are a not-for-profit charity that has been working in the public interest since 1968, beginning with a campaign to protect Algonquin Park from development."
wildlandsleague.org

Appendix B: Research methods

Over an 18-month period, the Southern Ontario Nature Coalition (SONC) worked collaboratively to envision and recommend ways to support a Near-Urban Nature Network for the 3.2-million-hectare Greater Golden Horseshoe. SONC hopes to continue this work with further engagement with Indigenous Peoples and Communities and other leaders and partners in the region.

This project has taken place during the COVID-19 pandemic. It has not been an easy time to undertake collaborative work and yet we have seen generous and enthusiastic support from many people and groups. There is hope that SONC will grow as a partnership to include more diverse voices and knowledge.

Southern Ontario Nature Coalition

SONC is a partnership of experienced provincial, regional, agricultural, and community-based organizations, land-based policy experts, and First Nations consultants knowledgeable about engagement and the land

Indigenous engagement

Cambium Indigenous Professional Services led the engagement process to the Williams Treaties First Nations and both Mississauga and Chippewa Nations including:

- Alderville First Nation
- Beausoleil First Nation
- Chippewas of Georgina Island
- Chippewas of Rama First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Scugog Island First Nation

Engagement is different from consultation. Engagement aims to build and enhance relationships with First Nations and Indigenous Peoples by exchanging information in the absence of legal consultation obligations. The purpose of engagement is to build trust, create meaningful relationships, and share the knowledge of neighbouring communities and of Indigenous matters. This includes information sharing regarding regulations, policy, legislation, and procedures.

Cambium Aboriginal Inc. was retained by the Greenbelt Foundation to assist with Indigenous engagement services for conserved and protected areas surrounding the Greenbelt and Near-Urban lands. The Williams Treaties First Nations were the focus of this project's first engagements.

Specific goals of engagement is to seek input on:

- The level of interest in the project from the community for further engagement
- The best methods to communicate and engage with the community as the project progresses
- Any preliminary comments or concerns that the community has on the proposed project.

Note the communities we spoke to provided some early guidance which has been incorporated into this report

Understanding priorities and filling knowledge gaps

Conservation plans and strategies were reviewed to understand priorities and identify gaps in information. SONC partners undertook strategic research including mapping, reviews, surveys, and collaborative efforts through working groups.

Review of plans and reports

Researchers reviewed conservation plans and strategies for the region, including:

- Canada's Federal Provincial and Territorial Departments Responsible for Parks, Protected Areas, Conservation, Wildlife and Biodiversity's *One with Nature* report
- The Indigenous Circle of Expert's *We Rise Together* report
- Environment Canada's A Healthy Environment and a Healthy Economy Climate Plan
- Ontario's Biodiversity Strategy
- Made-in-Ontario Environment Plan
- Provincial Land Use Plans, Natural Heritage System policies and technical reports including the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry's technical report on the Regional Natural Heritage System for the Greater Golden Horseshoe
- Carolinian Canada's Big Picture Protected Areas Strategy
- Nature Conservancy Canada's Conservation *Blueprints*
- Municipal and Conservation Authority natural heritage, climate and green space strategies

Notably, none of these regional conservation plans include mapped (or otherwise documented) Indigenous values, so the mapped priorities presented in this report are based primarily on settler, western-science perspectives.

Mapping and spatial analyses

Maps were developed to answer key questions identified by SONC partners. The maps are identified by their figure number in the report.

Figure 4.1 *Where are high-priority areas for protected and conserved areas, based on ecological values?*

This map depicts the landscape of the Greater Golden Horseshoe based on ecological values related to habitat types, unique landscape features, and areas of influence, as defined and weighted through expert input from SONC partners.

The ecological layers in the table below were assigned weights based on expert opinion of SONC partners. Weights were used to reflect areas of high ecological importance based on several factors, including their rarity or significance on the landscape (rare vegetation communities, ANSIs) and known links to sensitive species (cold water streams).

Geographic areas of importance were weighted highly, including areas of importance for connectivity or proximity to existing protected areas. On the ground these areas may currently have low ecological value. but they are nonetheless areas to explore further for potential protection and restoration because of their importance to the network as a whole.

Layer	Weight
Forest: Ministry of Northern Development, Mines, Natural Resources and Forestry's Southern Ontario Land Resource Information System (SOLRIS)	3
Wetland (SOLRIS)	4
Rare Vegetation Communities (alvar, prairie, shoreline from SOLRIS)	5
Aquifer Recharge Areas (moraines, sand, and gravel from Ontario Nature)	5
Cold Water Stream (Ministry of Northern Development, Mines, Natural Resources and Forestry, Aquatic Resource Area Line Segment) – Close	4
Cold Water Stream (Aquatic Resource Area Line Segment) – Mid Distance	2
Cold Water Stream (Aquatic Resource Area Line Segment) – Far	0
Proximity to Protected Area (CPCAD, Land Trust data1) – Close	5
Proximity to Protected Area – Mid Distance	3
Proximity to Protected Area – Far	0
Bowman and Cordes (Bowman and Cordes 2015[221]) – Significant to landscape connectivity	5
ANSI (Ministry of Northern Development, Mines, Natural Resources and Forestry) – Qualified	5
ANSI Candidate	5
Important Bird Areas (IBA Canada[222])	4

Ontario Nature, NCC, and OLTA (which included Escarpment Biosphere Conservancy, Bruce Trail Conservancy, Couchiching Conservancy, Long Point Basin Land Trust, and ORMLT properties Contains information licensed under the Open Government Licence – Ontario.

Figure 4.5 *Where can land use policy be strengthened so that significant sites meet OECM criteria?*

This map identifies areas where existing provincial policies could be improved or expanded so that more lands meet the criteria of protected and conserved areas, setting the stage for future contributions to Canada's Target 1.

Figure 5.1 *Where are regionally important ecological cores and corridors in the GGH?*

This map shows areas in the GGH that have high alignment of previously identified ecological cores and corridors as defined by conservation strategies developed that cover the entire region.

Figure 8.5 *Is access to nature equitable across the GGH?*

Demographic information obtained from the 2016 census from Statistics Canada was mapped in relation to the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry's land cover information (SOLRIS 3) to determine green space per capita in relation to race or ethnicity by Census Subdivision across the GGH.

Working groups

Four working groups addressed the following topics:

- Canada's Target 1: focused on identifying potential opportunities and pathways in the GGH to contribute to Canada's Target 1 of permanently protecting and conserving more lands and waters.
- Cultural significance: focused on identifying and communicating cultural significance of near-urban nature in the GGH.
- Voluntary measures: focused on understanding opportunities to promote and foster voluntary stewardship, restoration, protection actions among landowners in the GGH.
- Understanding nature's contributions to people: focused on identifying previous research identifying the many values that nature provides to people and how a Near-Urban Nature Network could enhance benefits

Research and case studies

SONC partners undertook research on opportunities, tools, and actions to support a Near-Urban Nature Network.

Protection

This case study led by Ontario Nature identified opportunities to establish new protected and conserved areas in the GGH, in addition to conventionally protected areas such as national and provincial parks and conservation reserves.

Connectivity

High-resolution connectivity mapping identified habitat patches and wildlife movement corridors that promote local landscape connectivity within the biodiverse Cootes to Escarpment EcoPark System and regional connectivity between the Greenbelt with the Lake Ontario shoreline. The EcoPark System is located within the highly urbanized regions of Halton Region and the City of Hamilton and managed by nine landowning partners. The mapping will inform and support biodiversity conservation and management activities led by partners

Restoration and enhancement

Two case studies focused on social, cultural, and economic benefits of a restoration economy that would support and benefit from a Near-Urban Nature Network. Specifically, researchers assessed the opportunities for and benefits from the native plant industry (led by Carolinian Canada) and a forest-based conservation economy (led by the Greenbelt Foundation) using a combination of literature reviews, surveys, and expert interviews.

Pan-Canadian relevance and opportunities

Wildlands Leagues is the Ontario Chapter of the Canadian Parks and Wilderness Society (CPAWS), a national organization with locations across Canada. Opportunities and interests related to near-urban nature were identified in several other city-regions across Canada.

Appendix C: Treaties with Williams Treaties First Nations

Treaty research was conducted by Cambium Indigenous Professional Services to determine there are 5 treaties that have been signed within the context of the Williams Treaties area. Those treaties include the Gunshot Treaty, Lake Simcoe Treaty #16, Nottawasaga Treaty #18, Treaty #20 and the Williams Treaties. There is no single correct way to do treaty research, but once one has become acquainted with the principal terms and sources of treaty documents it becomes a relatively simple matter to locate the text of a treaty. It can be a bit more difficult to discover the current status of a particular treaty. And it can be quite a challenge to find information about the negotiation or legislative history of a treaty.

Gunshot Treaty

This pre-confederation treaty was made on September 23, 1787. The Mississauga Nation claimed that seven townships lying immediately south of Lake Simcoe, belonging to them, had never been surrendered. A moderate estimate of the value of these townships alone would be $30,000.

No evidence has been found that a surrender of the townships in question has ever been made. It was further discovered that the lands lying between the Bay of Quinte and the County of York, and extending north a day's journey from the shore of the lake, commonly supposed to have been surrendered by what is known as the Gun Shot Treaty, are not described in any treaty.

The Gunshot Treaty, which was intended to cover the area in question, does not contain any description whatever of the land covered by it. The Commission suggested, in the event of a surrender from the claimants of the large tract of hunting grounds above described, to include in the surrender the lands intended to be covered by the Gun Shot Treaty and the seven townships lying immediately south of Lake Simcoe.

Lake Simcoe Treaty #16

This is a pre-confederation treaty signed November 17, 1815 at Kempenfelt Bay by representatives of the Crown and Chippewa Nation of Indians. Communities within the area include Orillia, Midland, and part of Barrie. The territory described in the written Treaty covers approximately 100,000 hectares. It reads, in part:

> *THIS INDENTURE, made the seventeenth day of November, in the year of Our Lord one thousand eight hundred and fifteen, between Kinaybicoinini, Aisaince and Misquuckkey, the Principal Chiefs of the Chippawaw Nation of Indians, on behalf of themselves and their Nation of the one part, and his Majesty George the Third, by the Grace of God of the United Kingdom of Great Britain and Ireland, King Defender of the Faith, of the other part, Witnesseth: that the said Kinaybicoinini, Aisaince and Misquuckkey, in consideration of five shillings apiece of lawful money of Upper Canada to them in hand paid by His Majesty at or before the ensealing and delivery of these presents, the receipt whereof is hereby acknowledged, and for other good causes and considerations them the said Kinaybicoinini, Aisaince and Misquuckkey hereunto specially moving have bargain and sell unto His said Majesty, His heirs and successors, all that parcel or tract of land situate and lying between Kempenfelt Bay upon Lake Simcoe and the Lake Huron, in the Home District of the Province of Upper Canada, and containing by estimation two hundred and fifty thousand acres of land are butted and bounced or may be otherwise known as follows, that is to say: Commencing on the north shore of Kempenfelt Bay on Lake Simcoe where a stone boundary is to be fixed at the distance of twenty chains on a course north eighty-one degrees west or thereabouts, from the base of a point called Sand Point projecting itself about five chains and a half into the said bay; then from the said stone boundary north forty degrees west thirty-six miles and a quarter, more or less, to Lake Huron; then along the shore of the said lake and following the several turnings and windings of the same around sundry points of land and bays to the bottom of a bay called Nottawaysague Bay.*

Nottawasaga Treaty #18

A pre-confederation treaty signed October 7, 1818 by the Crown and Chippewa Nation of Indians. Communities within the area include: Wasaga, Bradford, and Collingwood. The treaty reads:

> *It was agreed that a yearly sum of 12 hundred pounds, Province currency, in goods at the Montreal price to be well and truly paid yearly and every year by His said Majesty to the Chippewas Nation, inhabiting and claiming the said tract, which may be otherwise known as follows: Bounded by the District of London on the west, by Lake Huron on the north by the Penetanguishene purchase (1815) on the east, by the south shore of Kempenfelt Bay, the western shore of Lake Simcoe and Cook's Bay and the Holland River to the north-west angle of the Township of King, containing by computation 1 million 5 hundred and 92 thousand acres, and the said Musquakie, Kaqueticum, Maskigonce and Monitonobie, as well for themselves as for the Chippewa Nation inhabiting and claiming the said tract of land as above described, do freely fully, and voluntarily surrender and convey that same to His Majesty without reservation or limitation in perpetuity.*

Treaty #20

This pre-Confederation treaty, also known as the Rice Lake Purchase, was signed on November 5, 1818. This was the last of three Upper Canadian treaties signed with Anishinaabe peoples in what is now central southern Ontario. Current communities in the area include Peterborough and Lindsay.

Treaty #20, known as "Surrender M," was signed at Smith's Creek in the Township of Hope. In addition to all of Peterborough and Victoria Counties the surrender included two small parts of Northumberland, the north half of Durham, the northern tip of Ontario County, and those parts of Muskoka and Haliburton lying south of parallel 45. The area involved comprised 1,951,000 acres. For this the Crown undertook to pay £740 yearly in goods at the Montreal prices, or for "every man, woman, and child the amount of 10 dollars (Spanish) in goods, so long as each child shall live, but such annuity to cease to be paid in right of any individual who may have died."

The Treaty was signed by William Claus, Deputy Superintendent-General of Indian Affairs, and by six tribal Chiefs; about 230 Indians were affected by the treaty. In some references to the treaty the Indians are spoken of as Mississaugas; in the treaty itself they are called Chippewas, the Chiefs being named as "the principal men of the Chippewa nation of Indians." Many of them preferred the designation Ojibway, but the official designation is Chippewa. Seemingly the Indians were satisfied, but looking at it from the modern point of view it would appear as if they were given the worst of the bargain.

Williams Treaties

"The Williams Treaties were signed in October and November 1923 by the governments of Canada and Ontario and by seven First Nations of the Chippewa of Lake Simcoe (Beausoleil, Georgina Island and Rama) and the Mississauga of the north shore of Lake Ontario (Alderville, Curve Lake, Hiawatha and Scugog Island)" (*Canadian Encyclopedia*)

Williams Commission received a mandate to meet with each of the seven First Nations and research the claim and determine validity, and if valid to recommend settlement agreements to the governments – settlements could include cash and additional reserve lands and once the governments agreed on the terms of the settlement, they finalized the treaties with the First Nation. The Crown agreed that the Indians' claim regarding the northern hunting grounds were valid and it was included in the agreement and compensation would be provided.

Research showed no written agreements regarding Simcoe and Gunshot lands were included in the agreement and there was an additional clause to cover any missed aboriginal titled lands of the 7 First Nations. Clause 1 of the treaty – title to northern hunting grounds; Clause 2 – confirmed title to Simcoe and Gunshot; Clause 3 – Basket Clause: basically states "if you have any claims before now, or after, they are all null and void, and don't come back to us after the treaty is signed" and financial compensation was $500,000.00 divided equally between the Chippewa and the Mississauga.

On October 29, 2012, in *Alderville Indian Band et al v. Her Majesty the Queen et al.*, Canada and Ontario took the position at trial that harvesting rights associated with pre-Confederation treaties signed by the Williams Treaties First Nations were not intended to be surrendered in 1923, particularly the Treaty 20 (1818) area.[223] This position recognizes the Williams Treaties people's constitutionally protected harvesting rights in Treaty 20. This means the harvesters of Williams Treaties First Nations are able to exercise rights in line with those of other treaty people in most of Ontario.

Appendix D: Protected and Conserved Areas in the GGH

Downloaded from Canadian Protected and Conserved Areas Database (CPCAD) in January, 2021.

Name	IUCN Category	Area (Ha)	Type	Management	Protection date
Rouge National Urban Park	V	4,551	National Urban Park	Parks Canada Agency	2015
Carden Alvar Provincial Park (Natural Environment Class)	II	1,917	Provincial Park	Ontario Parks	2014
Queen Elizabeth II Wildlands Provincial Park (Natural Environment Class)	II	33,505	Provincial Park	Ontario Parks	2002
Silent Lake Provincial Park (Natural Environment Class)	II	1,610	Provincial Park	Ontario Parks	2000
Sharpe Bay Fen Conservation Reserve	II	636	Conservation Reserve	Ontario Parks	2000
Crowe River Swamp Conservation Reserve	II	190	Conservation Reserve	Ontario Parks	2000
Beattie Pinery Provincial Park (Nature Reserve Class)	Ia	688	Provincial Park	Ontario Parks	1997
Wainfleet Bog Conservation Reserve	II	234	Conservation Reserve	Ontario Parks	1997
Nottawasaga Lookout Provincial Park (Nature Reserve Class)	Ia	130	Provincial Park	Ontario Parks	1994
Holland Landing Prairie Provincial Park (Nature Reserve Class)	Ia	34	Provincial Park	Ontario Parks	1994
Kawartha Highlands Signature Site Park (Natural Environment Class)	II	37,587	Provincial Park	Ontario Parks	1989
Hockley Valley Provincial Park (Nature Reserve Class)	Ia	378	Provincial Park	Ontario Parks	1989
Noisy River Provincial Park (Nature Reserve Class)	Ia	378	Provincial Park	Ontario Parks	1989
James N. Allan Provincial Park (Recreational Class)	II	117	Provincial Park	Ontario Parks	1989
Indian Point Provincial Park (Natural Environment Class)	II	947	Provincial Park	Ontario Parks	1989
Short Hills Provincial Park (Natural Environment Class)	II	661	Provincial Park	Ontario Parks	1985

Name	IUCN Category	Area (Ha)	Type	Management	Protection date
Boyne Valley Provincial Park (Natural Environment Class)	II	431	Provincial Park	Ontario Parks	1985
Forks Of The Credit Provincial Park (Natural Environment Class)	II	282	Provincial Park	Ontario Parks	1985
Wolf Island Provincial Park (Natural Environment Class)	II	222	Provincial Park	Ontario Parks	1985
Duclos Point Provincial Park (Nature Reserve Class)	Ia	111	Provincial Park	Ontario Parks	1985
Mono Cliffs Provincial Park (Natural Environment Class)	II	732	Provincial Park	Ontario Parks	1985
Quackenbush Provincial Park (Cultural Heritage Class)	III	40	Provincial Park	Ontario Parks	1985
Wye Marsh National Wildlife Area	II	47	National Wildlife Area	Canadian Wildlife Service, Ont. Region	1978
Peter's Woods Provincial Park (Nature Reserve Class)	Ia	349	Provincial Park	Ontario Parks	1976
Petroglyphs Provincial Park (Cultural Heritage Class)	III	1,643	Provincial Park	Ontario Parks	1976
Awenda Provincial Park (Natural Environment Class)	II	2,915	Provincial Park	Ontario Parks	1975
Bronte Creek Provincial Park (Recreational Class)	II	682	Provincial Park	Ontario Parks	1975
Mcrae Point Provincial Park (Recreational Class)	II	138	Provincial Park	Ontario Parks	1971
Ferris Provincial Park (Recreational Class)	II	198	Provincial Park	Ontario Parks	1971
Mara Provincial Park (Recreational Class)	II	45	Provincial Park	Ontario Parks	1970
Waubashene Beaches Provincial Park (Nature Reserve Class)	Ia	34	Provincial Park	Ontario Parks	1969
Balsam Lake Provincial Park (Recreational Class)	II	449	Provincial Park	Ontario Parks	1968
Selkirk Provincial Park (Recreational Class)	II	73	Provincial Park	Ontario Parks	1967
Devil's Glen Provincial Park (Recreational Class)	II	60	Provincial Park	Ontario Parks	1965

Name	IUCN Category	Area (Ha)	Type	Management	Protection date
Earl Rowe Provincial Park (Recreational Class)	II	312	Provincial Park	Ontario Parks	1964
Wasaga Beach Provincial Park (Recreational Class)	II	1,844	Provincial Park	Ontario Parks	1959
Darlington Provincial Park (Recreational Class)	II	209	Provincial Park	Ontario Parks	1959
Springwater Provincial Park (Recreational Class)	II	193	Provincial Park	Ontario Parks	1958
Rock Point Provincial Park (Recreational Class)	II	187	Provincial Park	Ontario Parks	1957
Serpent Mounds Provincial Park (Cultural Heritage Class)	III	135	Provincial Park	Ontario Parks	1957
Emily Provincial Park (Recreational Class)	II	83	Provincial Park	Ontario Parks	1957
Bass Lake Provincial Park (Recreational Class)	II	65	Provincial Park	Ontario Parks	1957
Sibbald Point Provincial Park (Recreational Class)	II	225	Provincial Park	Ontario Parks	1957
Mark S. Burnham Provincial Park (Recreational Class)	II	39	Provincial Park	Ontario Parks	1955

Appendix E: Healthy landscape opportunities in partnership with native plants

Key Connections				SMART Green Investment Opportunities	
Economic drivers aligned with healthy landscapes	*Native plant partners (sellers)*	*Healthy Landscape Partners (buyers)*	*Accelerators showing current growth*	*Strategic levers to scale up*	*Triple Bottom Line: Planet – People – Profits*
Bulk market for high-quality green infrastructure Sample target: Scale up native plant supply chain to support 30%-50% healthy ecosystems on the landscape	Indigenous Communities Native plant growers Public and private landowners Regenerative agriculture e.g., bulk native plant seed production Service providers e.g., Conservation Authorities, Consultants Non-profits e.g., Forest Ontario partners, ALUS Social enterprises Associations	Large landowners e.g., corporate, utilities, government Communities – climate / natural heritage / natural assets / recreation strategies Land- and water-based industries e.g., agriculture, fishing, hunting, ecotourism, forestry Corporate Social Responsibility – switching to native plants addresses 14 UN SDGs	Global: UN Decade on Ecosystem Restoration 2021-2030 UN Sustainable Development Goals Nature-based climate solutions National: Two billion tree program Climate adaptation Species at Risk Canada Target 1 Reconciliation Regional: Increasing demand from voluntary action, policies and best practices Green Infrastructure economy e.g., GIO case, MNAI Insurance Industry /Risk e.g., extreme weather mitigation / pests	Resilient seed strategy and forecasting e.g., OPRA Voluntary standards and recognition program Training land managers and consultants Research and development – high quality green infrastructures Green Investors e.g., Conservation Impact Bond (CIB) New technology for equitable and strategic investment e.g In the Zone	Planet – nature-based climate solutions for long-term sustainability People – thriving, healthy, resilient, safe communities – with clean air, water, soil – food security– high functioning ecosystem services – jobs Profits – climate adaptation / reducing risk / sustainable restoration economy in balance with the planet / Dark green investment opportunities / Increase market value of ecosystem services / increase natural capital

Key Connections				SMART Green Investment Opportunities	
Economic drivers aligned with healthy landscapes	*Native plant partners (sellers)*	*Healthy Landscape Partners (buyers)*	*Accelerators showing current growth*	*Strategic levers to scale up*	*Triple Bottom Line: Planet – People – Profits*
Retail market for eco-landscaping Sample target: 30% -50% of outdoor plant market shifts to native plants	Indigenous Communities Garden Centers Start-ups Landscapers Social enterprise Markets	Peri-urban homeowners Gardeners Institutions Trails Parks Urban forestry e.g., Forest therapy trails	Labelling e.g., In the Zone Community action / non-profits e.g., Pollinator Partnership, Canadian Wildlife Federation Grow hope: Supporting people in taking tangible action where they live 70% of Ontarians support biodiversity (OBC survey) Gardening and landscaping trends	Supporting social enterprise growth with business tools / impact loans – strengthening the industry Native plant hub – supporting supply chain connections e.g., Loblaws, Joint marketing strategy (build awareness and streamline customer supports)	Planet – greater park ecosystem, Pollinators, natural connections People – recognize and know native plants of the region/ equitable access to nature / physical and mental health Profits – local healthy green jobs, all levels of expertise from entry to expert
Speciality market for biodiversity Sample target: 10%-20% of NP economy supports plant diversity (with a focus on rare / climate-adaptive living seed banks / seed orchards	Indigenous Communities Seed collectors Seed orchards Speciality trained gardeners and groups Landowner leaders	Conservation programs Native plant Growers	Local expertise Volunteer force Seed collector certification Biodiversity strategies Tech tools for community science, seed tracking, stewardship, monitoring DNA screening tools Mainstreaming biodiversity Public interest in rare plants e.g., Pawpaw	Training Coordination between diverse ownership for a robust, sustainable, mandate-resilient framework	Planet – Living gene bank / extinction crisis / protecting core habitat People – highly meaningful work / seed sovereignty Profit – cost savings by preventing loss of species before they are listed / resources for the next generation / long-term industry / leverage expertise and volunteers

Key Connections				SMART Green Investment Opportunities	
Economic drivers aligned with healthy landscapes	*Native plant partners (sellers)*	*Healthy Landscape Partners (buyers)*	*Accelerators showing current growth*	*Strategic levers to scale up*	*Triple Bottom Line: Planet – People – Profits*
Reconciling peoples and ecosystems Sample target: Support Indigenous leadership in strengthening relationships with native plants across all communities	Indigenous Communities Native Plant Growers Service providers Municipalities Conservation Authorities	Green leaders Public and private green space	National Indigenous Economic Development Board – Priority Area 3: Regional Economic Development for Indigenous Peoples NIEDB Respecting native plants as partners in healing the landscape (not a commodity) Traditional knowledge Native Plant Growers Association (NPGA) Healing Forests and Gardens e.g., National Healing Forest program	Intercultural dialogue and partnerships Seed Sovereignty Integrating ethical business practices and respect for native plants into all processes Explore mechanisms to support seed sovereignty and economic reconciliation with Indigenous Communities	Planet – upholding natural law People – self determination, intercultural / intergenerational dialogue, cultural traditions, language, knowledge sharing/ planning for seven generations Profit – growing a just and green economy together that supports the land

Overview of Recommendations

Recommendations	Major Challenges Addressed	Rationale	How it helps
1. Support Indigenous leadership	Reconciliation Decolonization Healing the land Restitution	Strengthen cross-cultural dialogue, learnings and partnerships in ethical space Create more impact together	Support seed sovereignty Connect respectfully to build from local knowledge and leadership in the spirit and practice of reconciliation Supports Indigenous goals in traditional territories
2. Implement resilient seed strategy for all native plants with industry-wide source tracking system Address source needs and research gaps, with particular attention to climate adaptation. Develop practical guidelines with regular expert review.	Seed supply Research and development	Connect best knowledge to accelerate best practices and high-quality on-ground solutions Leverage momentum across a diversity of groups from research to non-profits to community to business to Indigenous	Links local to national and forest to herbaceous seed strategies in development Promotes climate-smart landscape "innovation lab"
3. Create network of seed orchards	Seed supply	Leverage conservation networks and lands	Supports climate adaptation Contributes to pest and disease management and protects genetic resources
4. Native Plant Hub for data management, forecasting, connecting supply and demand of seeds and plants, tracking seed source e.g., OPRA, Forests Ontario, Ontario Native Plant Growers Association (ONPGA) Joint marketing strategy	Inconsistent / uncertain demand Accelerated aggregate demand from many end-users with little lead time Contract restrictions	Accelerate collective action with collective wisdom Meet growing demand effectively by managing long-term forecasts Expand intermediary space for investment opportunities, e.g., Conservation Impact Bond	Generates specific industry data to make business decisions Creates a stable production planning context Assists the switch to native plants based on good data e.g., in greenhouses Supports different models of supply delivery, such as grower cooperatives
5. Explore investment models Connect infrastructure needs to high-quality supply e.g. CIB, MNAI	Risk management Unsynchronized timelines for funding and planting windows	Support aggregate projections for native plants needs based on long-term landscape-level goals	Brings together the best Indigenous and western knowledge to heal the land (respecting, protecting and expanding the practice through intergenerational and intercultural exchange) Positions the native plant economy in its rightful role as solution-provider Creates space for long-term contracts

Recommendations	Major Challenges Addressed	Rationale	How it helps
6. Social enterprise business tools and impact loans and grants to help native plant businesses grow to meet the demand	Diverse demands and needs of clients e.g., contract restrictions	Adapt proven tools from the social enterprise sector – leverage the fact that all native plant businesses are a form of social enterprise	Protects the "brain trust" of existing native plant growers and helps new start-ups to work with diverse clients Provides long-term financial investment to boost industry
7. Collaborative voluntary standards program for sites, plants, e.g., FSC, organics, In the Zone plant labels	Competition with non-native plants / low-quality options	Clarify to the consumer and client the value proposition of native plants	Helps land managers, planners, and decision-makers rationalize cost and quickly identify high-quality options Clarifies price-point / builds awareness / supports good organizational policy / creates a visible framework for growth
8. Training and certification programs to build job skills and sector capacity for all aspects of restoration economy e.g., seed collection, landscape planning and design, contractors	Lack of certified seed collectors Lack of focus on native plants in landscape architecture Skills upgrades for native plant installation	Scale-up capacity in the sector	Creates equitable access to knowledge Aligns professionals in the movement to protect and restore biodiversity
9. Sustainability and Biodiversity strategies that incorporate native plant goals and natural cover e.g., Corporate sustainability; Toronto Biodiversity strategy	Inconsistent / uncertain demand	Drive a native plant economy with big picture goals to scale-up production over time	Aims for 30-50% diverse native plants on the landscape for healthy wildlife, water and way of life. Include targets for high-quality cultural habitat (e.g., 20%), natural climate solutions, seed orchards Implements ecosystem accounting and municipal natural asset management e.g., MNAI Showcases native plant gardens and EcoTrails to build a local norm
10. Harness new technology with ecological science to guide and track collective stewardship action on complex landscapes with multiple partners, e.g., In the Zone app	Inconsistent / uncertain demand	Access real-time data for decision-making at a variety of scales	Translates science to action Provides equitable, at-home access to the best science, plants, and multiple partners Builds local knowledge and capacity for best practices across all sectors with the best science in real time Manages seed orchard registration and rare species tracking Assists in forecasting and guiding demand on a complex landscape Supports micro-target equitable investment for healthy landscapes

Appendix F: Examples of BIPOC, LGBTQ+ and youth-led organizations focused on nature in the GGH

Black Outdoors
"Jacqueline L. Scott is a PhD student at the University of Toronto, OISE, in the department of Social Justice Education. [her] research is on the perception of the wilderness in the Black imagination. In other words, how to make the outdoors a more welcoming and inviting space for Black people."[ccxxiv]

Brown Girl Outdoor World
"The who, what, when, where and how of the outdoors doesn't seem to include stories of the BIPOC (Black, Indigenous and People of Colour) community. Brown Girl Outdoor World is working to change that. We create the adventures, to build the community, to be the representation that will change the narrative."[ccxxv]

Colour the Trails
"A community of BIPoC and LGBTQ2S+ nature seekers… We offer a variety of outdoor activities; all you need to do is show up with an open heart and mind. We provide everything required to participate, and we subsidize the cost of the activity to increase accessibility."[ccxxvi]

Kahyonhákta
"a place where the history and culture of the Haudenosaunee is accurately and appropriately represented while providing cultural, social, educational, and economic benefits to the community of Six Nations. At the heart of Kahyonhákta is a reconstructed 17th century Iroquoian longhouse, Ganohsa'oweh, an original house in Gayogo̱hó:nǫ'/Cayuga."[ccxxvii]

Kaleidoscope Canada
"A space for the Black, Indigenous, and People of Colour (BIPOC) community who recreate and work in the Canadian outdoors!"[ccxxviii]

Kin x folk
We take youth out of the city and into the country side… Choosing to make our spaces Black focused gives the power back to our campers."[ccxxix]

Rice Lake Plains Partnership
Collective of Alderville First Nation, the County of Northumberland, Ganaraska Region Conservation Authority, Lower Trent Region Conservation Authority, the Nature Conservancy of Canada, Northumberland Land Trust, and Ontario Parks.[ccxxx]

TreesCO2
"TreesCO2 was founded in 2016 by youth [in the GGH] to inspire the world to plant trees through action and education."[ccxxxi]

Urbanminds
We are creating meaningful ways for youth to shape equitable and sustainable cities."[ccxxxii]

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Southern Ontario Nature Coalition

SONC is a partnership of experienced provincial, regional, Indigenous, agricultural, community-based organizations, and land-based policy experts and is committed to engaging Indigenous Peoples and Communities in accordance with community protocols and the development of ethical space for all to contribute meaningfully.

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For more information, please contact: **near_urban_nature@greenbelt.ca**

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