

STATE OF LARGE PARKS IN ONTARIO'S GOLDEN HORSESHOE





INTRODUCTION

Parks are Green Infrastructure

Parks are a key asset in our regional green infrastructure system. They provide important spaces for activities ranging from play and exercise to relaxation and restoration. In the complex mosaic of parks in Ontario's Golden Horseshoe, larger and more natural parks offer us an escape from the noise and pollution of urban life. These parks give us the opportunity to benefit from the cultural and spiritual aspects of the natural world and the mental health benefits associated with time spent in nature. Large, natural parks also provide significant ecological services such as stormwater management, pollution reduction, climate change resilience, and the preservation of biodiversity.

Parks Support Healthy Communities

Parks of all sizes contribute to human health and well-being; however, there are a wide variety of unique or magnified benefits associated with large parks (large parks are defined in this report as parks that are 50 hectares or more), including the following:

- Large parks are more likely to be used for physical activity than smaller parks.
- Large, natural parks allow for better wilderness experiences, providing an opportunity for solitude. There are health and well-being benefits associated with reduced noise and visual stimulation.
- Large parks contribute more ecosystem services, including cooling benefits and air quality improvements.
- Large parks help contribute more to climate change mitigation by sequestering more carbon.
- Large parks help foster biodiversity and often harbour more native species. This directly supports recreational and nature-appreciation activities such as bird watching.
- Large parks are economic generators, driving tourism in many communities.
- Large parks are the best natural classrooms, helping encourage public understanding, appreciation and enjoyment of nature.

HIGHLIGHTS

- 139 parks, 50 hectares or larger, account for half of the total parkland in the Golden Horseshoe.
- The Golden Horseshoe would need to acquire nearly 15,000 hectares of large parkland by 2041 to maintain the current level of large park supply per person.
- Ontario's Golden Horseshoe (population of 7.4 million) has more than 54,000 hectares of parks that are owned and managed by municipalities, Conservation Authorities, and the provincial and the federal governments.
- Large park supply per capita will drop drastically with anticipated regional population growth.
- There is a growing gap in government capacity for planning, funding, establishing, and managing large parks for public recreation and nature appreciation.
- Action must be taken to ensure residents across Ontario's Golden Horseshoe will have continued access to large parks and the many benefits they offer. This action should include further research on policy solutions and new funding mechanisms to address the gap.

PARKS FOR MENTAL HEALTH

Walking 90 minutes through a natural area can reduce activity in the neural area of the brain linked to mental illness compared to the same walk through an urban environment.
(Bateman et al. 2015)

The Large Park Gap

As the population living around the Greenbelt grows, pressures will increase on our existing park system. At the same time, there is also a focus on building denser communities in city development and re-development that does not include establishing new large parks. This means people will have to travel farther in order to find nature-based experiences, often well out of their own neighbourhoods. Large parks are destination style attractions, often drawing visitors from other towns and municipalities. At present, large parks are owned and managed by different levels of government with significant differences in funding, planning and establishment. They also operate and are governed differently from one another, even though they are often in close proximity.

Given the unique benefits of large parks, and the challenges associated with their differences, a regional assessment is necessary to evaluate the risks of an inadequate number of large parks for the growing population (and that population's commensurate need for nature-based experiences). The current parks management framework has created a government capacity gap for large park planning, establishment, and management; not addressing these risks will have negative impacts on the health and well-being of communities throughout the region, as our existing large parks reach capacity. It's as simple as understanding that as we grow, our parks must grow with us.

PURPOSE OF THIS REPORT

This report aims to accomplish the following:

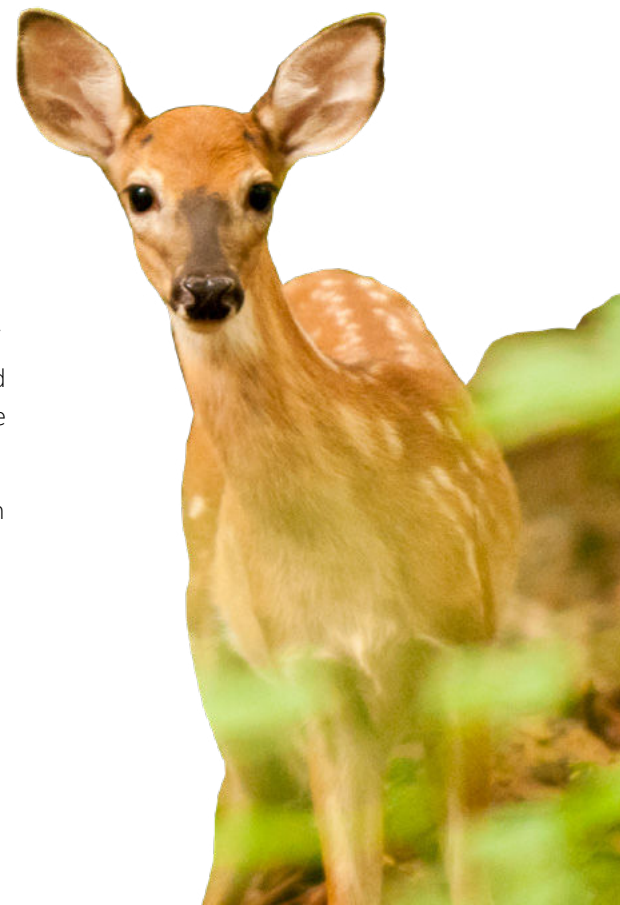
- Present the first regional scale analysis of park supply in the Golden Horseshoe, with a focus on large parks.
- Benchmark the broader parks system in the Golden Horseshoe by analyzing the size and number of parks and then focusing in on the distribution, supply, and capacity of large parks.
- Assess the current framework for funding, establishment, and management of large parks.
- Evaluate whether the current supply of large parks will be able to keep up with population growth and the subsequent demand.
- Illustrate large park capacity issues with two case studies of parks that are already nearing or at their recreational carrying capacity, and highlight the management approaches that are being used in response.



METHODOLOGY

Notes on Methodology

- This research compiled park information from 43 municipalities, 10 Conservation Authorities, federal and provincial park agencies, and the Niagara Parks Commission to complete a regional scale assessment of the Golden Horseshoe.
- For the purposes of this report, the term park is used to describe a publicly owned and publicly accessible piece of land that provides recreational and nature-appreciation opportunities as one of its main functions. This includes municipal, provincial and federal parks as well as conservation areas and regional forests that are open to the public. The parks may vary in size, function, quality and access fees.
- The definition of parkland varies slightly by land manager. In order to allow for comparison, we removed any non-traditional parklands, including utility corridors, cemeteries, school grounds and golf courses.
- In areas where park information was not available in GIS format, supplemental information including official plans, recreational maps, satellite imagery and municipal addresses were used to approximate park boundaries.
- Informal recreational lands and trails owned and operated privately or by non-park governmental agencies were not included in this analysis.
- Local municipalities select park size categories that make sense within their local context and vary from one municipality to the next. Because our interest is in large, regional parks, we defined large parks as being a minimum of 50 ha in size.
- In regional comparisons, the large parks that cross regional boundaries are included in the totals for each region. They are only counted once for the calculation of the total number of large parks for the entire Golden Horseshoe.
- The 2041 population projections were taken from 'Schedule 3' of Ontario's Growth Plan for the Greater Golden Horseshoe. The methodology behind these forecasts can be found in the report "Greater Golden Horseshoe Growth Forecasts to 2041: Technical Report (November, 2012) Addendum, Hemson Consulting Ltd., 2013". While methods vary, this population forecast for the Golden Horseshoe is similar to the Ontario Ministry of Finance's forecast, which is updated annually based on Census information.



Notes on the Study Area

The geographic scope of the report encompasses the region predominantly bound by the Greenbelt and Lake Ontario. Historically referred to as the Golden Horseshoe, it is a highly urbanized area that is home to more than half of Ontario's population. It is the focus of this report because it includes the majority of the Greenbelt, is home to a rapidly growing population,

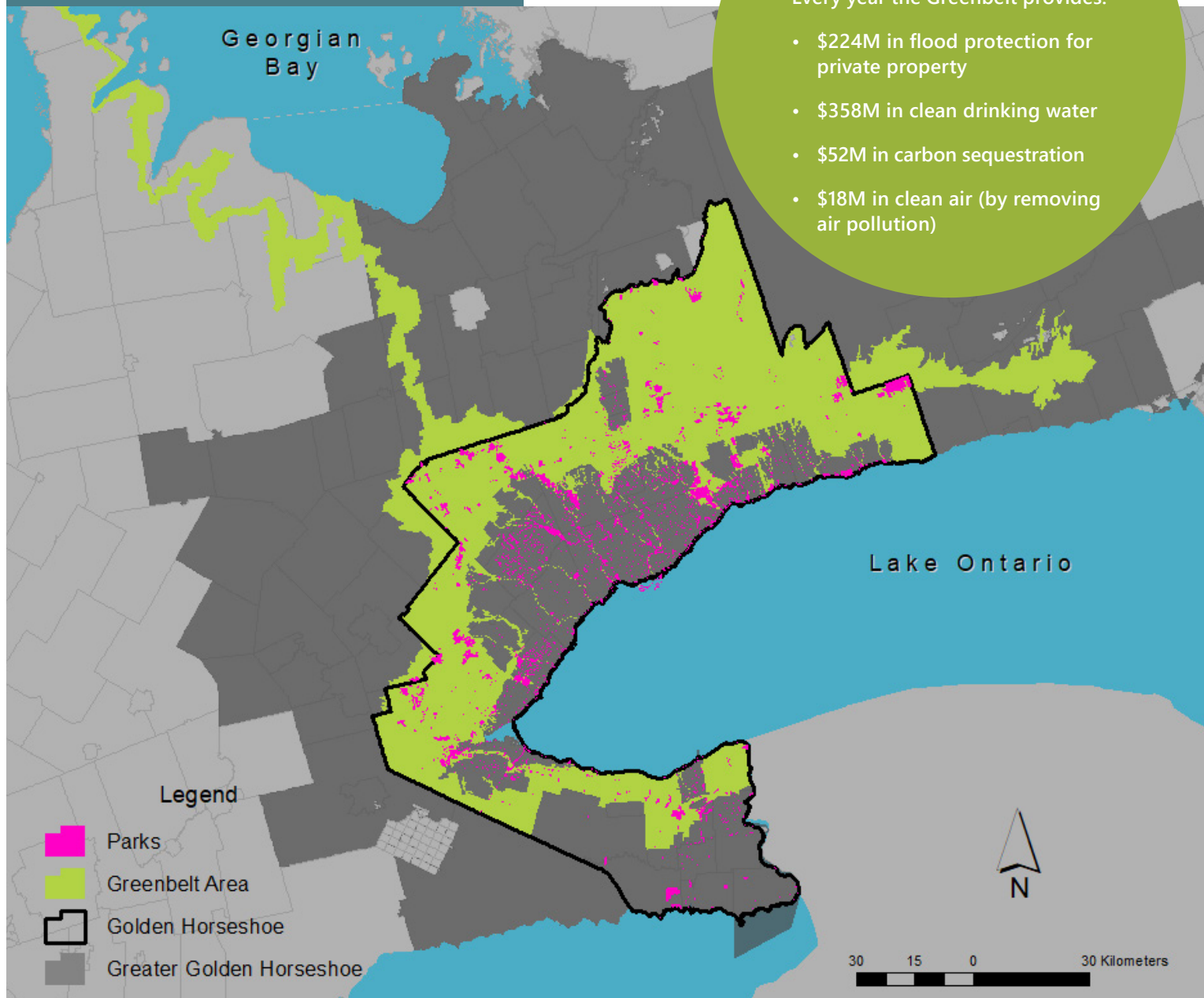
and includes parks accessible by day-trip to the residents of the densest areas of Ontario (in Ontario 73 per cent of nature-based recreation occurs within 20 km of home). The Greenbelt is critical because it protects countryside, natural areas and prime agricultural lands from development and contributes to the vision of complete communities articulated in Ontario's Growth Plan for the Greater Golden Horseshoe.

STUDY AREA

ECOSYSTEM SERVICES

Every year the Greenbelt provides:

- \$224M in flood protection for private property
- \$358M in clean drinking water
- \$52M in carbon sequestration
- \$18M in clean air (by removing air pollution)



Current Park Distribution

In Southern Ontario, there are generally five types of publicly owned and accessible parks:

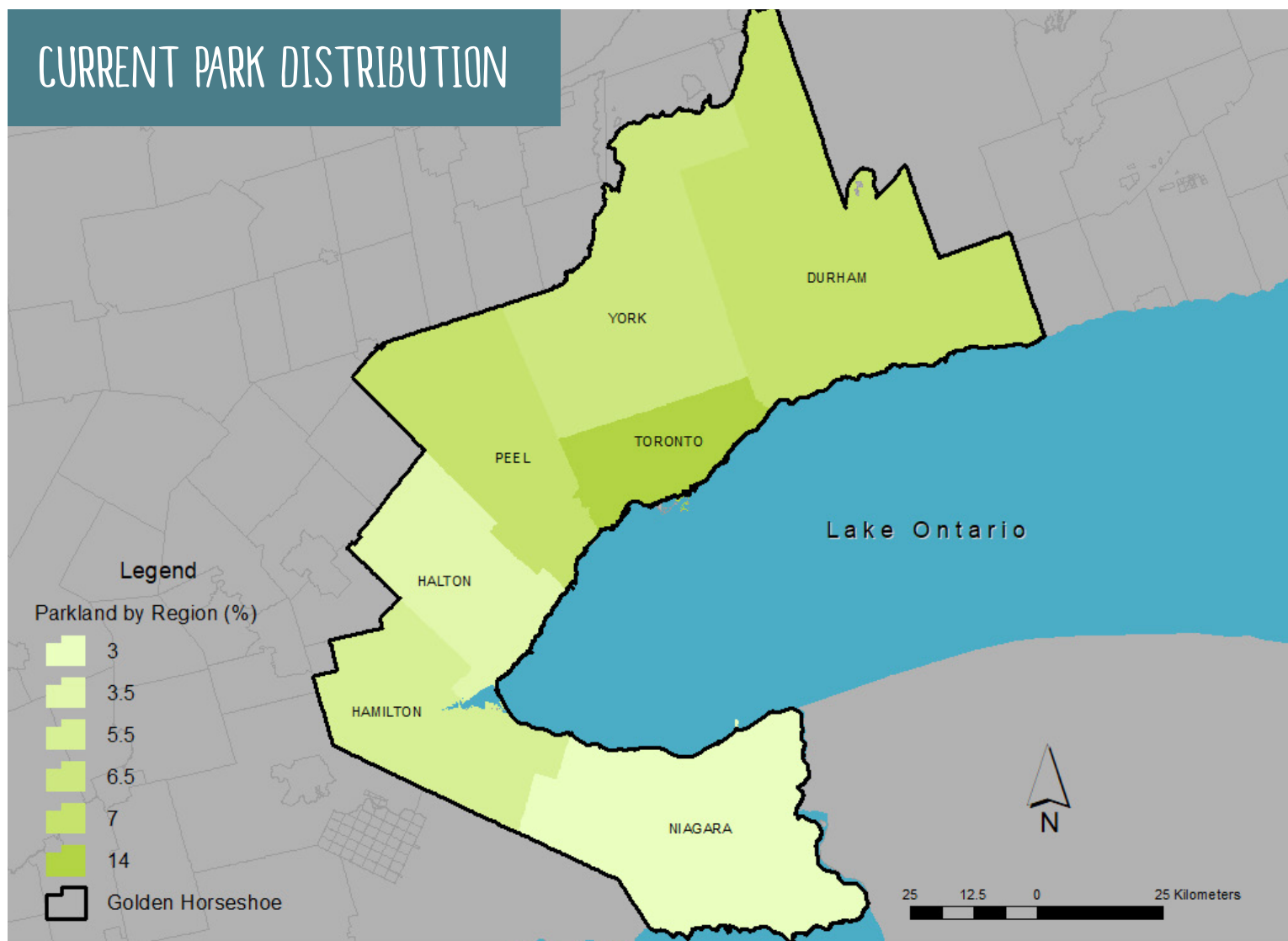
- Municipal parks
- Conservation areas
- Federal parks
- Regional forests
- Provincial parks

In the highly urbanized Golden Horseshoe region, there are 54,000 hectares of parkland, made up of 6,257 parks. These parks range in size from the 0.005 ha St. Mary Street Parkette in the City of Toronto to Rouge National Urban Park, which includes more than 2,400 ha of recreational lands within its boundaries.

When viewed as a percentage of the land base, more land is dedicated to parks in urbanized and populated areas of the Golden Horseshoe - likely due to a confluence of factors, including:

- A higher demand for park establishment in urban municipalities (compared to more rural areas). In rural areas, residents are often perceived to have easier access to greenspaces, even if the greenspace is not explicitly designated as a park or in public ownership.
- Regional geography itself - for example Toronto's shoreline and valley features - attracted settlement and helped to drive its current population base. Large, linked features were prime candidates to be designated as parks during the mid-20th century conservation movement, and subsequent initiatives created a significant amount of dedicated parkland in the region's most urbanized areas. Hurricane Hazel also played a significant role in ensuring the valleylands were protected from development (and subsequently became important ribbons of parks in the landscape).

CURRENT PARK DISTRIBUTION



Park Funding, Establishment & Management

In urban areas, the planning, establishment and management of parks for recreational use is usually the responsibility of lower-tier municipalities. They are planned in concert with development initiatives to ensure that there is local greenspace available for the expected increase in population, and therefore the demand for them. Regional governments (e.g. Halton, Peel, Durham, Niagara) do not typically plan, establish or manage parks, although they may have some large parcels of land, such as regional forests, that provide access to greenspace. Regional governments, however, do support the work of Conservation Authorities through both engagement at a board level and financial support via direct funding (this funding is referred to as a levy). Conservation Authorities have worked extensively to serve local populations through Conservation Area establishment and management. Provincial parks are mainly funded by visitor fees that must cover operations, significantly limiting the ability to acquire land, especially in Southern Ontario. At a provincial level, there has not been any significant funding allocated to land acquisition for park establishment over the last decade. At the federal level, parks rely less on visitor fees, but they are acquired within a very narrow policy framework that seeks to establish parks for national significance.



PARK TYPE	MAIN FUNDING SOURCES	MAJOR DRIVER OF ACQUISITION
Municipal Parks	• General government revenue • External revenue (e.g. grants, donations, cost-sharing arrangements) • Parkland dedication that requires a portion of land used for development be set aside for parkland or a cash-in-lieu payment. • Parkland has been excluded from development charges since 1997, but park infrastructure is eligible. • Permit fees	Recreational needs
Conservation Areas	• Mostly municipal levy funding, up to 50% contribution for land acquisition • Visitor fees	Hazard lands, ecological significance
Regional Forests	• General government revenue	Environmental protection
Provincial Parks	• Primarily visitor fees • Small portion from general government revenue	Environmental protection, cultural heritage
Federal Parks	• General government revenue • Some visitor fees	Protection of representative natural areas across the country

Park Funding, Establishment & Management *(continued)*

While lower-tier municipalities bear the responsibility for providing local options for recreation, large parks serve a regional visitor base that extends far beyond municipal borders. Municipalities generally have tools to obtain capital for new parks, but their planning and priorities are not usually focused on larger park development. Conservation Authorities can access land acquisition funds from some municipalities but there are no longer matching funds from the provincial government to support the acquisition, making it increasingly difficult to add land to the public park system. In fact, many large Conservation Areas were established as a result of hazard land acquisition in the 1960s for large dam projects that were never realized. All of these factors have led to a growing gap in government capacity for planning, funding, establishing, and managing large parks for regional recreational and nature-appreciation needs, and this gap is likely to increase as a result of population growth within the Golden Horseshoe. To address the gap, further research, including a focus on policy solutions, new funding mechanisms, and better government coordination is needed.

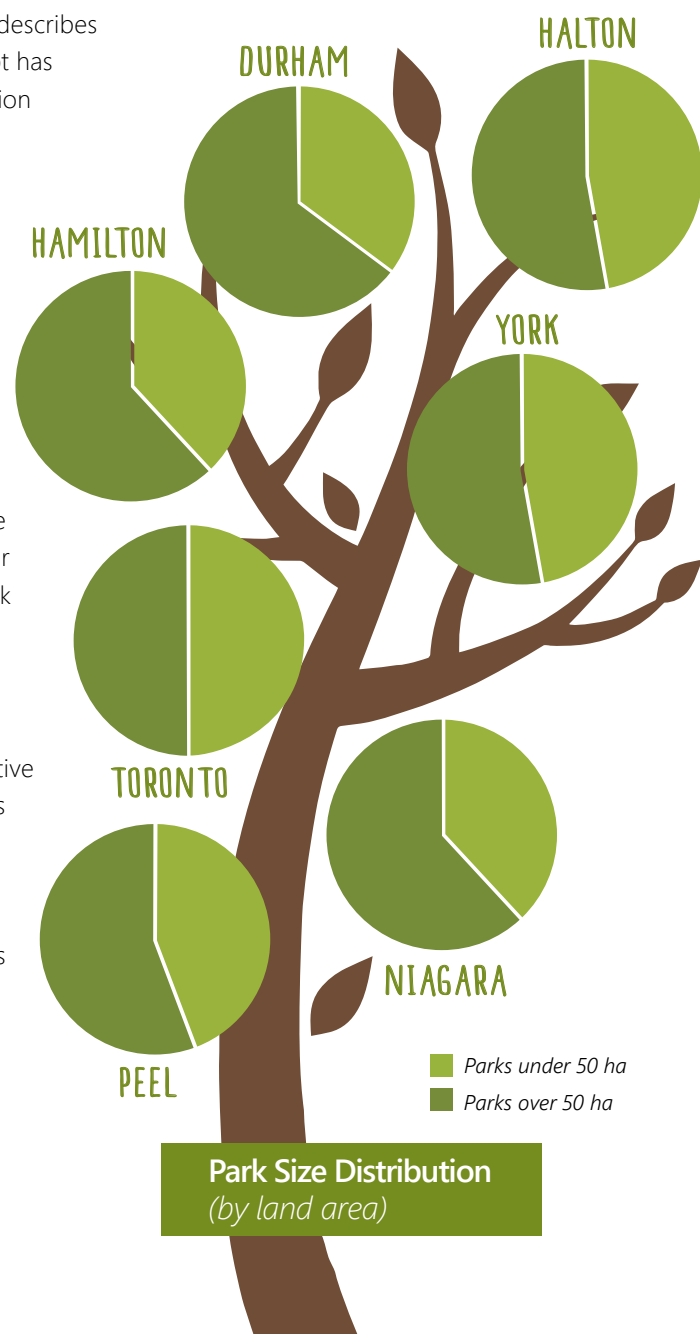
Carrying Capacity

The term 'carrying capacity' is a concept borrowed from ecology that describes the maximum population size an environment can sustain. The concept has been applied to recreational use of parks, but has an added complication when applied in this new context: the quality of the visitor experience.

Many of the region's large parks already experience significant demand and are having to tackle management and operations challenges related to carrying capacity. We have already established that large parks contribute significantly to human health and wellbeing; these contributions will decline if a park is over-capacity.

A park that is near or over-capacity can result in a visitor experience that includes higher sound levels, crowding, less appealing views, damaged infrastructure and increased environmental impact. All of the above can induce stress and therefore negate the sense of solitude and regeneration often sought by a park visit, resulting in a poor visitor experience. Moreover, traffic around the park, full parking lots, and lack of support infrastructure (eg. bathroom shortages) have reverberating impacts on local communities.

However, despite the evident risks associated with overuse, it can be a challenge to identify when a large park has reached its capacity. Negative consequences of human park use are often dependent on local factors and the park's setting, making generalized assessments difficult. For a regional scale analysis this creates a challenge when trying to identify the number of recreational visitors large parks can accommodate from a one-size-fits-all number, or even a range. As a result, this report uses case studies to investigate the capacity issues already facing some of our regional parks and focuses on assessing the future supply of large parks given anticipated populations growth.



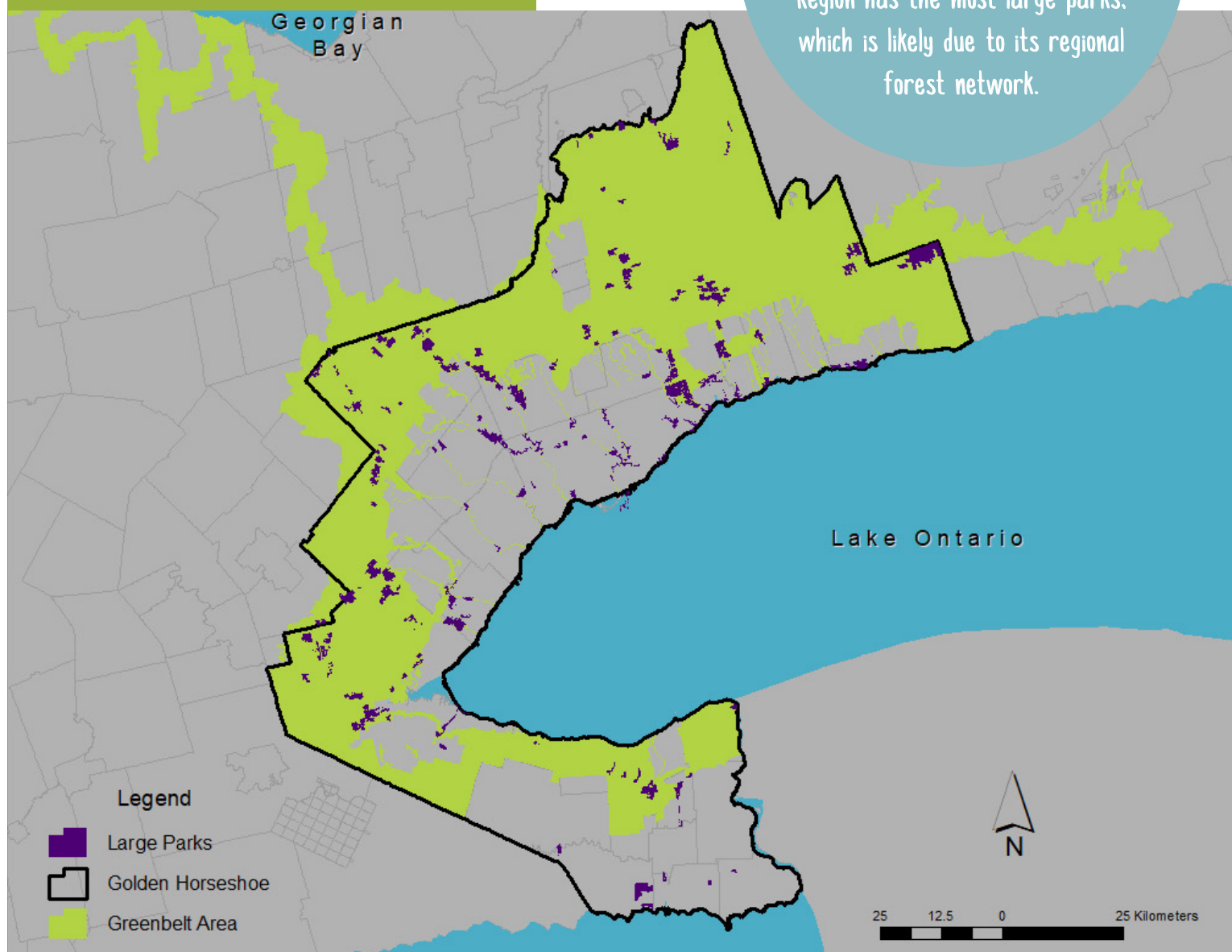
Current & Future Large Park Supply

Ontario's Golden Horseshoe is home to 139 parks that are more than 50 ha in size; this equates to only 2.2 per cent of parks in the region. Yet, at a total of 27,000 ha, large parks account for half of the region's parkland. Therefore these large parks are critical to protect and invest in to ensure they are available for recreation and escaping in to nature.

Ontario's Golden Horseshoe is Canada's densest urban area, and it is where the popularity of large parks has already resulted in significant capacity issues. These issues tend to occur every summer weekend and often on weekends in the spring and fall.

Large parks tend to be located around the urban/rural interface, and the majority (80%) fall within the Greenbelt. York Region has the most large parks, which is likely due to its regional forest network.

DISTRIBUTION OF LARGE PARKS



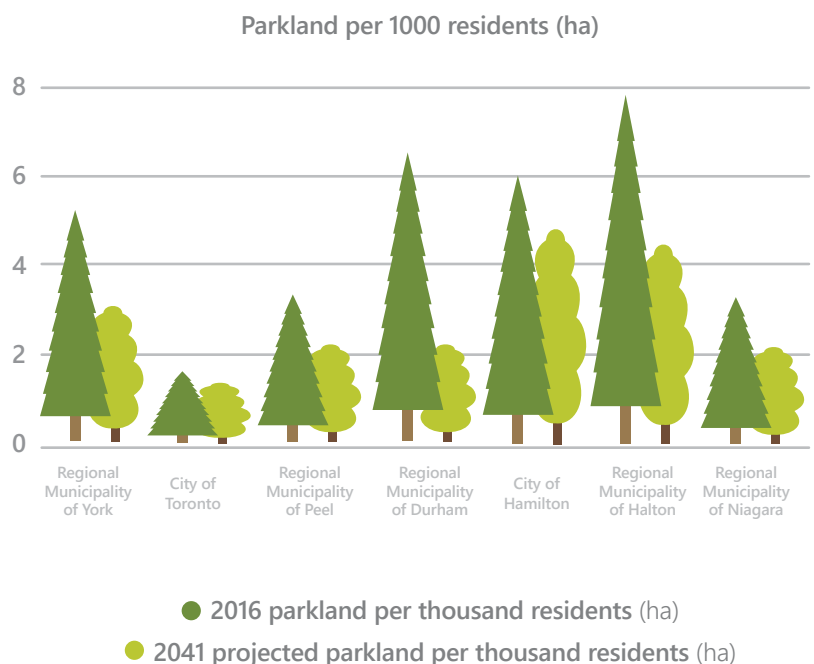
Ontario's Growth Plan for the Greater Golden Horseshoe states that municipalities should be planning for complete communities with convenient access to "an appropriate supply of safe, publicly-accessible open spaces, parks, trails, and other recreational facilities". Large parks significantly contribute to complete and livable communities. In a region where population is expected to grow dramatically, large parks are important assets for providing nature-based recreation. To maintain or improve the overall level of service large parks provide the region, their availability needs to keep up with population growth.

If Ontario does not plan for establishing large parks on a regional scale, we will not be able to keep pace with the demands of our growing population. Currently, there are on average 3.7 ha/1000 people of large parks in the Golden Horseshoe. If the region grows at the rate predicted in the Ontario's Growth Plan, that number is set to drop to 2.4 ha/1000 people by 2041 assuming no new large parks are added or developed in the next two decades. This precipitous drop highlights the need for new land within existing large parks, and the establishment of new large parks to serve the growing population.

It is critical to note that the region would need nearly 15,000 ha of new large parkland to maintain the current level of large park supply per person by 2041. That is more than a 50 per cent increase in large parkland.

With most large park establishment having occurred decades ago, land acquisition funds less accessible, higher land prices and the lack of a regional parks strategy in policy or practice, there is an absence of government capacity and direction to address the 'large park gap'.

The findings of this report highlight the need for coordinated planning, funding, and a focus on creating large parks in the Golden Horseshoe.



The following two case studies are examples of large parks in Ontario: a Conservation Area and a municipal park. These case studies aim to illustrate large park capacity issues by focusing on two parks that are already nearing or at their recreational carrying capacity. The case studies highlight challenges the parks are facing and management approaches that are being used to address them.

CASE STUDY

Belfountain Conservation Area



WHERE:

Village of Belfountain in the Town of Caledon near the Forks of the Credit

OWNERSHIP:

Credit Valley Conservation (CVC)

MANAGEMENT:

Credit Valley Conservation (CVC)

SIZE:

56 hectares

SIGNIFICANT ATTRACTIONS:

- Four kilometers of trails from the Bruce and CVC trails systems.
- The culturally significant Belfountain Dam (waterfall), Fountain and Swing Bridge

About the Park

The Belfountain Conservation Area (BCA) includes three properties that share significant ecological features:

- Belfountain Conservation Area proper
- Willoughby Property (owned by the Ontario Heritage Trust; managed by CVC)
- Cox Property

The area that is now BCA proper was first opened to the public in 1914 when the original landowner, C.W. Mack, opened up his summer home to the public. Purchased by CVC in 1959, it has been managed as a park and recreation space for more than 100 years. It contains cultural attractions such as park features built in the early 20th century. The other two properties were acquired in the 1980s, and whilst neither have significant recreational amenities, the Willoughby Property contains two hiking trails that have been used since the 1960s. The conservation area's rich history includes remnants of early industry and quarrying activities, as well as unique park features including the Belfountain Dam, a historic fountain, and a cave.

Ecologically, the BCA is located within the Niagara Escarpment, a UNESCO World Heritage Biosphere Reserve. This designation supports the conservation of unique features and ecosystems. The BCA also contains portions of an Environmentally Significant Area (ESA), Life Science Area of Natural and Scientific Interest (ANSI), and provincially significant Woodlands.

Park Use

The BCA experiences high visitor levels throughout the summer and fall – particularly on weekends – with visitor use focused on a couple of main areas within BCA proper. Staff observations indicate that during specific times (holiday weekends in the summer and fall), the site is at or near its capacity.

Beyond high visitor volumes over particular weekends, BCA is seeing an overall trend of increased use, as shown on the figure on the following page. The number of yearly recorded visitors hit record levels in 2015 and then again in 2017.

ACCESS:

Vast majority of visitors drive

FEE:

\$5.75/adult (+tax), \$10/car on weekends and holidays

MAIN ACTIVITIES:

Hiking (easy to challenging)
Photography
Nature Appreciation

OPEN SEASON:

April to October

STAFF:

3-4 on weekends and 1-2 on weekdays

PARKING:

2 lots, total capacity of approximately 45 vehicles

Due to high visitor numbers and very limited on-site parking, staff occasionally have to indicate that the parking lot is full and re-direct people to other nearby parks. Alternatively, visitors will leave the conservation area, park outside the gate and walk in – which causes traffic congestion in the village.

Managing for Growth

Challenges

The BCA's biggest management challenge is finding and managing for the right balance between visitors, ecology, history and cultural priorities. BCA proper, in particular, has to balance these priorities while addressing high levels of visitor use. To help inform management approaches, CVC has a data collection program that uses Visitor Information Surveys, automated trail counts, postal code analysis and observational data to track visitor use and adapt management actions to respond to significant changes.

Management Approaches

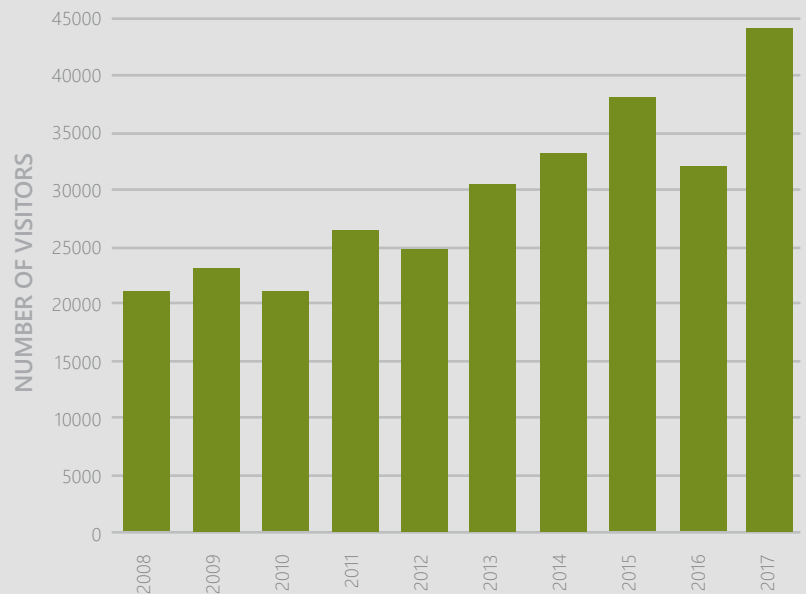
Located on the edge of a rapidly growing urban area, BCA may already reach its carrying capacity on peak days - and its visitor use trends point toward an increasing demand. Currently, CVC is undertaking the following approaches to help plan for current and future demand levels:

1) Development of the Belfountain Conservation Area Management Plan as a long range planning initiative. Managing the three properties as a unit will help ensure their unique features are protected and that they are managed as a system. Staff are using the planning process to create policies and infrastructure to handle increased visitor demand. One key focus has been to prepare for managing unknown demand due to the rate-of-use rapidly changing. For example, the management plan process itself began in 2014, and therefore baseline data did not capture the level of growth from 2015 and 2017. The Management Plan identifies a vision that will change how people visit and experience the Conservation Area.

2) The Conservation Area experiences high visitor use on weekend days and relatively low use during weekdays. CVC is exploring options to more evenly balance levels of use through program scheduling and an incentivized fee schedule that will encourage off-peak time of week and season visitations.

3) BCA proper was experiencing capacity issues in the picnic area, in part, because some visitors were staying for the full day, resulting in no parking turnover in the already undersized lot. There was a need to move away from using the Conservation Area as a day-long picnic site to increase availability of the facilities for a larger number of people. In 2017, CVC implemented a 'no group picnicking' policy that encourages shorter visits; this resulted in a higher turn-over rate, improved visitor flow and reduced the total number of visitor hours.

Belfountain Conservation Area Annual Visitation



CASE STUDY

Ajax Waterfront Park



WHERE:

Town of Ajax

OWNERSHIP:

Town of Ajax and the Toronto and Region Conservation Authority (TRCA)

MANAGEMENT:

Town of Ajax with occasional capital project support from TRCA

SIZE:

More than 60 hectares

SIGNIFICANT ATTRACTIONS:

- A section of the Waterfront Trail
- Lake Ontario views
- Picnic and playground amenities

About the Park

Ajax Waterfront Park is six kilometers of parkland stretching across the Town of Ajax's southern border along the shores of Lake Ontario. During the early years of Ajax's establishment as a town, Ajax's Council decided to retain a majority of the waterfront property as public land. As a result, almost the entire length of Ajax's waterfront remains publicly owned and maintained. The park features unique topography, characterized by rolling landforms and high bluffs. It is accessible to the public, with bridges spanning creeks, natural and maintained parkland areas, and gardens. There is also public beach access and a boat launch. It is bound to the west and east by two provincially significant coastal marshes: Duffins Creek and Carruthers Creek.

The park also features an asphalt trail, which is more than seven kilometers in length; it is part of the Waterfront Trail system that runs along Ontario's great lakes and also part of the Trans-Canada Trail. In addition to the Waterfront Trail feature, there are sections of the park with recreational amenities (e.g. playgrounds, bathrooms), as well as lots of open green areas along the shoreline.

Park Use

The park is used by residents and visitors who come to enjoy the scenic views, have picnics, engage in recreational activities, and utilize the multi-use trail for walking, jogging, cycling, and in-line skating.

The park is a key component of the Town of Ajax's local recreation and cultural system, and also forms a major destination point in Ajax's community gathering and tourism infrastructure. It has also quickly become a popular summer destination for all of Durham Region. The Waterfront Trail in particular serves as a destination feature for tourism.

Recreation uses in the park are primarily passive, nature-oriented, and unstructured. The managed open space turf areas are maintained at a sufficient size to support unstructured sports.

The park and trail already experience high use levels, especially in the summer, and increased usage is expected to continue due to the growing population. The park rarely needs to turn people away, but there is now a permit required for gatherings of 15 people or more.

ACCESS:

Car, transit, bike, and by foot

FEE:

No fee, picnic permits for groups of 15 or more

MAIN ACTIVITIES:

Walking, biking, rollerblading, picnicking, fishing, relaxing, bird watching, splash pads/playground use

OPEN SEASON:

Year round

STAFF:

Dedicated summertime grounds maintenance staff and by-law enforcement staff

PARKING:

Parking facilities approximately every 2 km

Managing for Growth

Challenges

Ajax Waterfront Park's management challenges include the high number of visitors, congestion around one of the park's entrances, and the need to restore ecologically sensitive areas.

Management Approaches

1) The town has developed a Parks and Recreation Strategy that outlines short and long term capital projects for the park. Some of the improvements identified in these strategies include:

- The town is currently building a washroom and additional parking along the eastern side to help alleviate some of the congestion on the west side.
- The park is accessible by all modes of transportation, however there has been a significant effort to make the waterfront more accessible by active transportation modes through the installation of bike lanes and sidewalk expansions including the Harwood Avenue south revitalization.

2) The Town has also identified and implemented operational improvements required to help address increased use. Since 2016, they have:

- Required a permit for any group of 15 persons or more for a Picnic Shelter/Pad Rental (with a maximum of 30 persons).
- Increased staff, security and by-law presence during the peak periods of late spring – early fall to ensure large group events are managed.
- Enforcement of on-street parking restrictions and installation of permanent “no parking” signs on one side of 10 local streets surrounding the waterfront. The signs restrict parking between May 15th and September 30th on Saturdays, Sundays and holidays between the hours of 8 a.m. and 7 p.m.

3) The Town of Ajax, in conjunction with the Toronto and Region Conservation Authority (TRCA), has a Shoreline Improvement Strategy that highlights a number of initiatives to help restore ecologically sensitive areas. The Town of Ajax regularly works with TRCA to enhance areas, post signage to educate, and install barriers to limit or restrict access to certain areas. The park also has a large area dedicated to a pollinator meadow including solitary bee habitat. Furthermore, the Town has installed a number of Low Impact Development (LID) features along the waterfront including rain gardens and bioswales. They also frequently host stewardship events to help maintain the Ajax Pollinator Meadow as well as to collect litter and plant trees.





CONCLUSION

A Call to Action

Large parks are important green infrastructure assets required to meet the needs of residents in Ontario's Golden Horseshoe. They provide diverse, complex, and natural spaces for a broad range of people. Expanding this critical green infrastructure will support human health and wellbeing, and provide vital ecological services for a growing population.

This report presents the first regional scale analysis of park supply in the Golden Horseshoe. Focusing on large parks, it provides a benchmark of the current state of parks in the Golden Horseshoe and assesses the current large park funding, establishment, and management framework. It also shows that the current supply of large parks will not keep up with population growth if governments do not prioritize large park

system planning. Finally, it illustrates existing park carrying capacity issues and highlights management challenges and approaches that are being used in response to high use levels. Further research could be focused on exploring the carrying capacity for various user experiences, economic impact, tourism, and educating governments, public and private stakeholders on the value of large parks to the health and wellness of our communities.

There is an increasing need to plan, fund, establish, and manage large parks for regional recreational and nature-appreciation needs. At the same time, there is a growing gap in capacity for the relevant levels of government to do this, and both the need and gap are likely to increase as population and demand grow. Immediate action must be taken to ensure residents across the region will be able to continue to rely on large parks for the many benefits they offer. A key avenue to explore includes investigating financial models and policy solutions to support establishment and management of regional scale large parks.

References

- Larson, L. R., Jennings, V., & Cloutier, S. A. (2016). Public parks and wellbeing in urban areas of the United States. *PLoS One*, 11(4), e0153211.
- Giles-Corti et al. (2005) from: <https://worldurbanparks.org/images/Newsletters/IfpraBenefitsOfUrbanParks.pdf>
- The health and social benefits of nature and biodiversity protection. A report for the European Commission (ENV. B. 3/ETU/2014/0039). London/Brussels: Institute for European Environmental Policy; Bowler, D. E., Buyung-Ali, L., Knight, T. M., & Pullin, A. S. (2010).
- Urban greening to cool towns and cities: A systematic review of the empirical evidence. *Landscape and urban planning*, 97(3), 147-155; Chang, C. R., Li, M. H., & Chang, S. D. (2007). A preliminary study on the local cool-island intensity of Taipei city parks. *Landscape and Urban Planning*, 80(4), 386-395.
- <https://worldurbanparks.org/images/Newsletters/IfpraBenefitsOfUrbanParks.pdf>
- http://www.parks-parcs.ca/english/ConnectingCanadians-English_web.pdf
- http://www.parks-parcs.ca/english/ConnectingCanadians-English_web.pdf
- http://biodivcanada.ca/2A0569A9-77BE-4E16-B2A4-C0A64C2B9843/2012_Canadian_Nature_Survey_Report%28accessible_opt%29.pdf
- <https://www.ontarioparks.com/donate/whydonate>
- <http://fwspubs.org/doi/pdf/10.3996/052010-JFWM-011?code=ufws-site>
- Manning, Robert E. 2013 Parks and Carrying Capacity: Commons Without Tragedy



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Maps: Produced by Toronto and Region Conservation Authority (TRCA). Third party data was used to compile the maps with various source dates. The TRCA takes no responsibility for errors or omissions in the data.