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Rouge Urban National Park

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Abstract

The recent Rouge National Urban Park Management Plan put out by Parks Canada in 2019 has raised some concerns about the future of the Rouge Watershed as a centre for biodiversity. The Rouge Watershed is a fragile ecosystem, and poor management of it can lead to issues such as flooding, poor water quality, and habitat loss. The purpose of this report is to examine the impacts of Parks Canada's lackluster Management Plan and propose new policies that can ensure the Rouge Watershed remains a centre for biodiversity in Southern Ontario. Research shows that in order to protect the Rouge, stricter policies need to be implemented on urban and agricultural developments, while Parks Canada needs to focus its efforts on maintaining the ecological integrity of the Rouge Watershed, as opposed to promoting it as a destination for tourists and nature enthusiasts. These policies will hopefully prioritize environmental efforts such as research, conservation, and habitat restoration and ensure that the Rouge Watershed remains a centre for biodiversity.

Keywords : Biodiversity, Watershed, Rouge National Urban Park, Conservation, Species

Introduction

The Rouge Watershed, which covers an area of over 60 km^2 spanning from the shores of Lake Ontario to as far north as Stouffville, is an epicenter for biodiversity in Southern Ontario. Despite being surrounded by urban development, the Rouge is home to approximately 1700 different species, including over 100 plant species, 247 bird species, 73 fish species, 44 mammal species, and 27 species of reptiles and amphibians (Friends of the Rouge, 2019). This biodiversity is the result of several environmental factors, including general location, variations in topography micro-climates, soil types, and land usage, all of which contribute to making this area an ideal habitat for a wide variety of different species (Friends of the Rouge, 2019). The original Rouge Park was established in 1995, with the goal of conserving this land, and preventing the Rouge from being swallowed up by ever-increasing urban and agricultural development. Much of the conservation efforts in the Rouge have revolved around habitat restoration. Organizations like

Friends of the Rouge Watershed restore areas that have previously been developed back to their former states. The Beare Road Wetland located off of Meadowvale Road was once a landfill until it was closed in 1983, and has since been successfully converted into a wetland area (Friends of the Rouge, 2019).

On May 15, 2015, the Rouge National Urban Park (RNUP) was officially established, becoming Canada's first national urban park and the largest urban park in North America. As a result, jurisdiction of the park was handed over to Parks Canada. However, since Parks Canada's involvement in the project, some concerns have been raised about the future of the park. The greatest concern to conservationists so far has been the lack of habitat restoration. Since Parks Canada's involvement in 2015, the rate of habitat restoration projects in the Rouge has dropped an astounding 80%, this despite a $16 million budget increase from the federal government (Friends of the Rouge, 2019). At the same time, urban development projects have continued to move forward without any challenges. These increasing urban developments affect the movement of excess rainwater. The Rouge neighbourhood, located downstream near Lake Ontario, has seen 100-year floods occur twice in the last three years (Friends of the Rouge, 2019) (see Appendix A for economic valuations of wetlands). Only 13% of the Rouge Watershed is actually in "natural cover", meaning the remaining 87% has been disrupted, destroyed, or disconnected at some point in time (Friends of the Rouge, 2019). This habitat fragmentation limits species to small pockets of natural cover, making them more vulnerable to harm. According to recommendations from Friends of the Rouge Watershed, approximately 40% of RNUP land should be allocated to locally grown, ecologically compatible farmland. However, approximately 50% of the land is currently used for agricultural purposes. Additionally, the farmers that purchase this land are often large-scale industrial operations that grow corn or soy for international trade, and often use harmful agricultural methods such as pesticides and herbicides (Friends of the Rouge, 2019). There has also been a noticeable pattern of agricultural land being sold to only a few industrial farmers, often for prices as low as one third of the fair market value ($40-$80 per acre as opposed to $120-$240 per acre).

There has also been concern that the vision of Rouge National Urban Park that Parks Canada has been promoting is not what the original vision of Rouge Park was. Rouge Park was formed with the intention of conserving the tremendous biodiversity that the Rouge Watershed held. However, Parks Canada's 2019 Rouge National Urban Park Management Plan seems to be geared less towards conservation, and more towards making RNUP a destination for visitors. While the Management Plan does mention maintaining the park's ecological integrity as a priority, it places a significant emphasis on providing visitors a "powerful gateway experience to the park at various welcome areas that will be connected through an extensive and interpretive trail network." (Parks Canada, 2019). While it could be argued that education to the public is beneficial, the goal of the RNUP should not be to attract more people to the area, but rather to maintain the area as a space for biodiversity.

It is clear that changes need to be made to this policy to ensure that the biodiversity of the Rouge Watershed is not sacrificed for the sake of attracting tourism. Stricter measures need to be implemented to prevent urban developers from expanding further onto the Rouge territory. A more transparent process is required in the distribution of land for agricultural purposes, to ensure that land is used for a variety of agricultural purposes as opposed to large monocultures. Lastly, the Management Plan should be altered to include less measures for visitors (e.g. visitor centres, trails) and more measures focused on conservation, research, and habitat restoration.

Methods

Research has been collected through various sources for this project. To clearly get the main policies and initiatives put into place to resolve these issues, we conducted an extremely focused research. Firstly, we wanted to understand the layout of the park and so, we explored an app called The Rouge, that was created by some University of Toronto Scarborough Co-op Students (see Appendix B for information about this app). This app allowed us to understand the various things that the park has to offer. Through this app we were able to explore the history of the park, and the types of flora and fauna present in the park. In terms of collecting information about the species at risk in the Rouge Urban National Park we had collected information through the Friends of the Rogue Watershed. They provided us with statistical figures and values to the

amount of species that are currently at risk within the Park and also the policies and regulations that they have implemented. To further support their claims, we also looked into the data that was provided by Parks Canada. To look into how the current spaces of the park are being used, we were provided with data from the Friends of the Rouge with both images and data from 2002 all the way to 2017. This allowed us to compare the changes that had been made to the park and to understand if they had been taken correctly. To support the material that they provided, we also looked into the Toronto and Region conservation authority website, to understand more about how the park is being used. Some of the challenges surrounding water management practices in the watershed were outlined in the data that was received from FRW. The secondary information was acquired directly from Parks Canada and the FRW website. Additionally scholarly articles were found to establish a clear relationship between such issues and how they must be dealt with. Lastly, when analyzing the collected data we are going to focus on highlighting the plans and policies that may have already been placed, and other recommended initiatives that can help the management of Rouge Park combat the issues as they continue to protect endangered species, water quality, and the future of the park.

Results and Discussion

Rouge National Urban Park is known for its relatively high levels of biodiversity. The park's location is known for providing it with the unique qualities that allow it to house various species of plants and animals. It was found that 13% of the park is natural cover, meaning that 87% of that habitat has been disrupted, destroyed, or disconnected at some point in time. The park is also known for its various topography, soil types and micro climates and is also the home to various different habitats such as forests, meadows, rivers, wetlands and agricultural fields. It was found that the Rouge National Urban Park is home to around 1700 species and 1000 different plant species. It was discovered that 27 of these species and plants are known to be endangered. Even though 87% of the park has been destroyed and disturbed parks Canada and the Friends of the Rouge are determined to restore these various disturbed ecosystems. The monarch butterfly, for example, is endangered due to the herbicides that are being sprayed. Also the blanding's turtles are known to be endangered due to the urban development and habitat fragmentations that are taking part in the Rouge Urban National Park. Due to these various

species and plants going extinct, Parks Canada and Friends of the Rouge have implemented various plans in order to both reintroduce and maintain species diversity. These include various tree and wildflower replanting, turtle reintroduction, wetland and stream restoration and various other projects. These various projects have shown positive results, in terms of restoring lost species and maintaining habitats. In a study that was conducted about the Rouge Urban National Park, it was found that there are intensive levels of urbanization (Ramsay et al, 2017). This has led the park to being home to more populated cities and less green space, that allows to conserve and maintain the conservation of the park (Ramsay et al., 2017). In the study they had used 280 qualitative surveys and found that people are not aware as much as they could be about the Rouge National Urban Park (Ramsay et al., 2017). Due to the lack of knowledge that people have about such an area prevents it from being protected and viewed in the way that it should. More public awareness is still needed to be brought out in order for residents within those areas, and also those from other places to understand about such a land (Ramsay et al., 2017). In this article they state the fact that more millennials should be taught about the advantages of having natural spaces, and that they should be encouraged to learn how they can help preserve these decreasing urban park spaces (Ramsay et al., 2017). By having them understand the importance of these spaces, will help these declining urban parks to maintain their sustainability (Ramsay et al, 2017). This is very important, in the sense that millenials really need to understand the contributions that they can make to ensuring that the natural spaces of these parks are protected. In another study it was found that by connecting smaller green spaces together allows for biological species interconnections to grow, this is something that can help maintain the biodiversity within the Rouge (Niemelä et al, 2010). Also in order to maintain these green spaces, urban developers need to understand the benefits of having these urban national parks present (Niemelä et al, 2010). These urban parks are mentioned as being sources to one's general health (Niemelä et al, 2010). Having these parks play a role in carbon dioxide sequestration which leads to the management of climate change (Niemelä et al, 2010). In order to maintain the biodiversity and conservation of this park proper land planning needs to take place so that more natural green spaces can be protected.

Rouge National Urban Park extends across three watersheds, situated in the heart of the Rouge River watershed yet an important contributor to the headwaters of the West Duffins Creek watershed. It forms a key ecosystem connection within the Greenbelt between Lake Ontario and the Oak Ridges Moraine (Parks Canada, 2019). Since the watercourse in Rouge Park is managed by Parks Canada, they need to ensure the strongest ever protections in the Rouge's history for the park's ecosystems and its vast and diverse array of cultural and agricultural resources, especially since the Rouge Park Watershed has been overlooked in the past. Friends of the Rouge aim to maintain the ecological integrity of the park through policy analysis, especially by improving the health of the ecosystem, watershed, and local community, as well as promoting ecosystem approaches to environmental planning, encouraging environmental awareness and stewardship, and monitoring indicators of ecosystem health (Friends of the rouge, 2019). They have completed various initiatives which helped repair past damages made to the park's natural systems, and in combating the effects of climate change, urban sprawl, and flooding. A major point of concern has been increased amounts of flooding in the Rouge; Flooding, water quality have been seriously neglected in the past, and due to drastic increases in urbanization and climate change (Friends of the rouge, 2019). Increasing urban development affects where excess rainwater goes, which increases the likelihood of flooding. The Rouge neighborhood, located downstream near Lake Ontario, has seen 100-year floods occur twice in the last three years, and without proper habitat restoration methods being implemented, the situation can worsen (Friends of the rouge, 2019).

Parks Canada released a management plan in 2019, which describes how the steps will be taken to adapt to changing conditions in a way that supports the long-term viability of the ecological, cultural and agricultural values for which the park was established. By building a culture of conservation, the park can strengthen the awareness and support for Canada's role in achieving targets that protect at least 17 percent of terrestrial and inland waters and 10 percent of coastal and marine areas by 2020. (Parks Canada, 2019). Of course these goals may or may not be achieved as planned, however, they will prove to be the changes that caused the greater good for Canadian in the long-term. ecological connectivity across landscapes of Rouge park will

enhance ecological and climate resilience in support of the maintenance or restoration of ecological integrity at Rouge (Parks Canada, 2019). As we've discussed earlier, there are a number of issues surrounding the management of the watershed, like erosion, flooding, loss of biodiversity, spread of invasive species, and controlling water quality. The easier way of attempting to resolve these issues is by investing in ecosystem services, which will help maintain and restore the ecological integrity of the park while nearby communities benefit too (Parks Canada, 2019). Ecosystem services can benefit people with services such as food, water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services (Bellver-Domingo, 2016). Rouge Park has some ecosystem services already in place for a long-term benefit for the park's ecology and economy. (Refer to Appendix A). It is also extremely important to constantly monitor the agricultural and farming practices on the site, as these practices might prove to be helpful in supporting aquatic connectivity, restoring ecological integrity and improving soil texture. The park's Indigenous partners expressed this idea as a positively reinforcing circle, healthy water supports healthy soil that in turn supports human health and encourages practices that nurture water, soil and people (Parks Canada, 2019). It then becomes essential to create an environment that can support this positively reinforcing circle. Healthy hydrological functions, and improved water quality in the park's watercourses and wetlands reflect continuing efforts in integrated ecological restoration; through such efforts this landscape will increasingly support coldwater fish communities, ecological connectivity and the maintenance or restoration of ecological integrity (Parks Canada, 2019). Hence restoration of hydrological functions not only help protect water quality, but they also assist in restoration of aquatic life, and riparian plant and animal species.

Additionally, climate moderation and creating solutions that help adapt to climate change in the future years is extremely significant. The water flow in the park's creeks will be mainly influenced by the weather and how the drainage system works. The drainage usually carries all the precipitation directly into the watercourse, if these areas do not have any quality treatment plans the quality of the water gets effects over a long term period. Water that goes into the watercourse and underground directly, causes serious contamination. In such cases, the Friends

of Rouge team always creates solutions that are natural and more efficient. For example, to control increasing levels of chlorine concentration in the water, the amount of road salt being used was decreased rather than using artificial ways which would not be as effective in the long-term (Friends of Rouge, 2018). It can get very tricky when it comes to managing water quality and stormwater. For stormwater management, the most common solution is to create newer areas that can hold more stormwater, the best kind being wetlands. However, newly created wetlands can have a strong ability to produce and accumulate methylmercury within their saturated sediment. These levels can be potentially physiologically hazardous for birds. Efforts to create more wetlands within Rouge Park are ongoing and fortunately the numerous benefits of creating wetlands may still be provided without elevated risk from methylmercury exposure (Sinclair, 2012).

Conclusion

Ultimately, the focus of Rouge National Urban Park should be on conserving and maintaining the ecological integrity of the Rouge Watershed. This involves putting a stop to the increasing urban developments that threaten to encroach further into the Rouge Watershed. Stricter regulations need to be introduced to keep developers in place, in order to prioritize the ecological health of the Rouge Watershed. This also involves encouraging ecologically-compatible methods of agriculture as opposed to traditional industrial-scale methods that dominate the Rouge. Perhaps most importantly, Parks Canada needs to reevaluate its vision for the RNUP, ensuring that the park is dedicated to conserving and protecting this precious and fragile land, instead of dedicating it to tourism purposes.

Recommendations

1. Habitat restoration rates need to increase drastically in order to make up for the 80% drop that has occurred since 2015. This would involve working in conjunction with organizations like Friends of the Rouge Watershed to restore former forest and wetland areas. The importance of these areas cannot be stressed further, since forests and wetlands provide

habitat for countless species, as well as acting as a sponge for excess rainwater, preventing flooding from occurring.

2. Stricter regulations need to be implemented on urban developments. Only 13% of park land in the Rouge Watershed is considered “natural cover”, meaning it has not been altered in any way. As more land is covered by urban housing developments, issues arise in flooding and habitat loss. By designating more land as a protected area, we can prevent any further damage.

3. A more transparent and fair process is needed for the distribution of land for agricultural purposes. Agricultural land can coexist with “natural cover” areas as long as ecologically compatible farming methods are used. Locally grown small-scale farming is encouraged in the Rouge Watershed, since it can provide a food source for local communities while also providing potential habitats for native species. Currently, most agricultural land in the Rouge is allocated to large-scale industrial farmers, whose methods often involve the harmful use of chemicals and monocultures.

4. Less focus needs to be given to the tourism aspect of RNUP. At many points in the 2019 Management Plan, Parks Canada stresses the priorities of providing a visitor experience for those who want to visit the Rouge. This portrayal of RNUP as a “tourist attraction” is contradictory to the initial purpose of Rouge Park, which is to protect an otherwise dwindling ecosystem in the middle of Southern Ontario.

5. In order to protect the species that are found within the Rouge National Urban Park, we feel that the Rouge Park area located north of Steeles Avenue should be relooked at. That specific area of the Park has been marked as being fair to poor in terms of its size and fragmentation by the Toronto and Regional Conservation Authority. Due to this, the species within this area are not being provided with sufficient spaces for long term support. We believe that by getting permission to expand the land area for more natural cover will reintroduce more species within that area of the park and also provide more long term sustainable growth for these species.

6. More emphasis should be put forth to teaching students and the general public about the importance of natural spaces. Either through media sources or educational classes, people should be exposed to more information towards how they can help protect these declining natural spaces. They need to be made aware that it will not only benefit the biodiversity and conservation measures of the park, but that it will also help them maintain their own physical wellbeing if parks like this are protected.

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Appendices

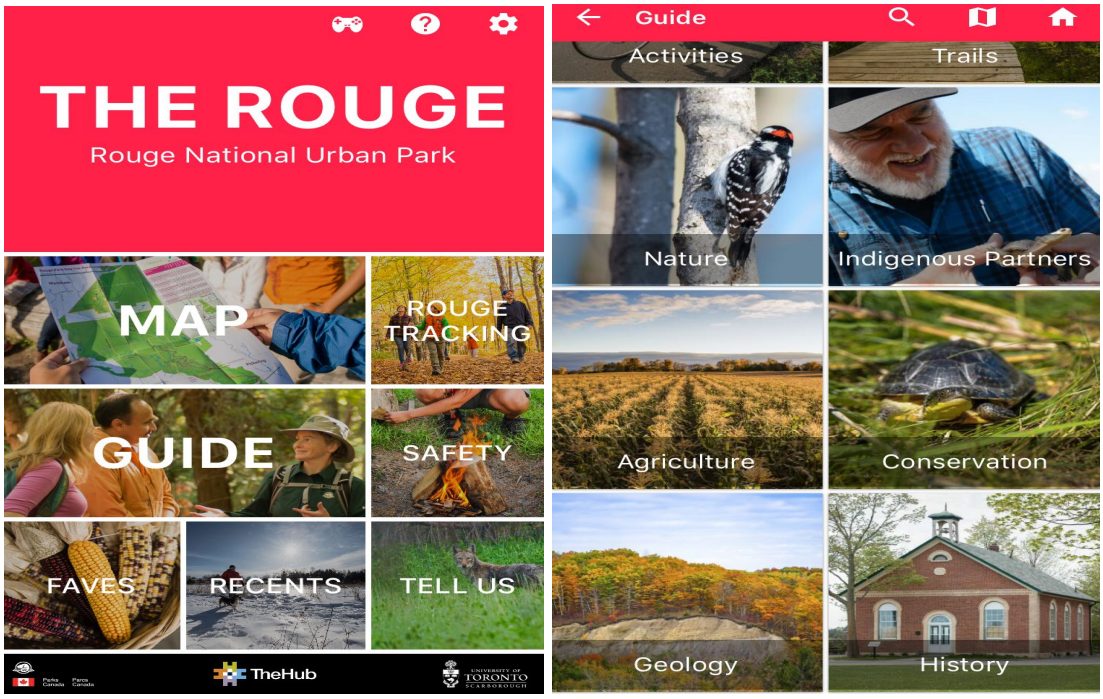
Appendix A

Table 3: Per-hectare ecosystem service value estimates cross-tabulated by land cover and service type

CATEGORY	Recreation	Aesthetic/ amenity	Other cultural	Pollination & dispersal	Habitat refugium/ biodiversity	Atmospheric regulation	Soil retention erosion control	Water quality/ nutrient & waste regulation	Water supply/ regulation	Disturbance avoidance	TOTAL
Agriculture											
Agriculture	$137		$97	$28		$31					$291
Grassland/Pasture/Hayfield	$53		$134	$19	$95	$19	$4	$25		$5	$353
Forest											
Forest: Non-urban	$270		$240		$2,428	$992		$513			$4,443
Forest: Urban	$14,903		$249	$7,536		$992		$513	$1,649		$25,843
Forest: Suburban	$11,373		$249			$992		$513	$1,649		$14,777
Forest: Adjacent to stream	$559				$133	$992	$779	$621	$1,320	$148	$4,552
Forest: Hedgerow			$7	$25		$992					$1,023
Urban herbaceous											
Urban herbaceous greenspace		$43,539	$249								$43,788
Open water											
Open water: River	$8,655		$25		$10			$33,906	$12,957		$55,553
Open water: Urban/suburban river	$172,691	$242						$45,768	$17,690		$236,392
Open water: Inland lake	$3,820	$593	$25					$612			$5,050
Open water: Great Lake nearshore	$554	$240									$795
Open water: Estuary/tidal bay	$451	$1,289			$13			$54	$45		$1,852
Wetlands											
Wetlands: Non-urban, non-coastal	$3,551	$6,446	$2,286		$75	$14		$2,779			$15,171
Wetlands: Urban/suburban	$9,861	$129				$14		$3,168	$48,929	$99,318	$161,420
Wetlands: Great Lakes coastal	$590	$2,527	$8,970			$14		$2,660			$14,761
Beach											
Beach: general	$72,892	$1,386								$15,330	$89,608
Beach: Near structures	$96,635	$2,773								$30,660	$130,068
Beach: Not near structures	$49,150										$49,150

This diagram, provided by Friends of the Rouge Watershed, measures the economic value of the various components of RNUP. The diagram shows that wetlands, particularly in urban and suburban areas, are among the highest annual economic values, (with a value of $161,420). This demonstrates how wetlands provide an essential service, acting as a “sponge” for excess rainwater, and ultimately preventing extreme flooding (Friends of the Rouge, 2019).

Appendix B



The Rouge is an app that was created in 2017 by the Informational and Instructional Technology Services (IITS) and Co-op students from the University of Toronto Scarborough. This app allows people to understand the organization of the park, its history, and also the various plans that they have put into place. Having an app like this allows people to also report problems that they feel should be corrected in terms of the parks agriculture, conservation practices and many other areas. By having apps like this created allows people to learn the importance of urban parks and also understand the ways in which they can take part in helping to sustain these declining areas (University of Toronto Scarborough, 2017).