

Impact Assessment Agency of Canada

Waterloo Region International Airport Runway Extension Project

Submission by Cambridge Butterfly Conservatory



Contact: Doug Wilson, President, Cambridge Butterfly Conservatory | 2500 Kossuth Rd, Cambridge ON N3H 4R7

Acknowledgements

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Executive Summary

The extension of runway 14-32 at Waterloo Region International Airport is a very costly endeavour that will have serious detrimental and permanent environmental consequences. If this project were to advance, it could potentially cause the felling of an estimated 2000 mature trees in a Provincially Significant Wetland known as the Kossuth Wetland Complex. This 12ha woodlot is on private property, Cambridge Butterfly Conservatory lands, and is part of a wetland complex that includes the Kossuth Bog, one of the last remaining Spruce bogs in the Region of Waterloo.

Notwithstanding the tremendous negative impact on the environment, wildlife habitat, flora, fauna including identified species at risk such as the Blanding's Turtle, this project will have an enduring detrimental effect on Cambridge Butterfly Conservatory's brand – the Conservatory conserves, protects, enhances and educates, not destroys. This project will further impact Cambridge Butterfly Conservatory's future plans and the work of the Kossuth Bog Foundation which includes the restoration of the Kossuth Bog.

Moreover, the proponent's main argument for extending the runway (the need for a second runway in the event of inclement weather) has very little merit and has never been proven nor verified.

At this crucial turning point in history, with all of the effort this country, this province and indeed this Region has devoted to mitigating climate change, protecting our natural resources and conserving our natural heritage, it is incomprehensible Waterloo Region International Airport would consider any intrusion into one of the Region's and the province's most significant wetland complexes for such a noncritical and unconvincing reason.

Introduction

Since the fall of 2019, Cambridge Butterfly Conservatory (CBC) has been engaged in conversations, discussions and correspondence with not only the proponent but also staff of Waterloo Region and members of Waterloo Regional Council. Our primary concern has always been the devastation this project would have on the Kossuth Wetland Complex. We have made our objections known from the outset. The proponent proposed a Natural Heritage Management Plan but given that the outcome of the plan could still result in the felling, topping and or pollarding of an estimated 2000 trees in CBC's woodlot, and the disruption of a wetland, CBC has declined the plan (Region of Waterloo Meeting

November 16, 2020). Were the plan to be for the purpose of protecting, enhancing and in certain cases, restoring the wetland, CBC would be in favour of implementing such a plan.

Cambridge Butterfly Conservatory opposes the extension of runway 14-32 and is formally requesting that a full impact assessment be conducted.

Background

Waterloo Region International Airport (the proponent) is planning the extension of Runway 14-32 (the Project) which will include extensions on both the north and south ends of the runway. This extension will not only negatively impact wetlands on airport property but because of federal restrictions regarding tree height in the flight path, this extension will have a severe negative impact on portions of a Provincially Significant Wetland (PSW), the Kossuth Wetland Complex. See Fig. 1 below outlining the proposed tree removal area as identified by the proponent.

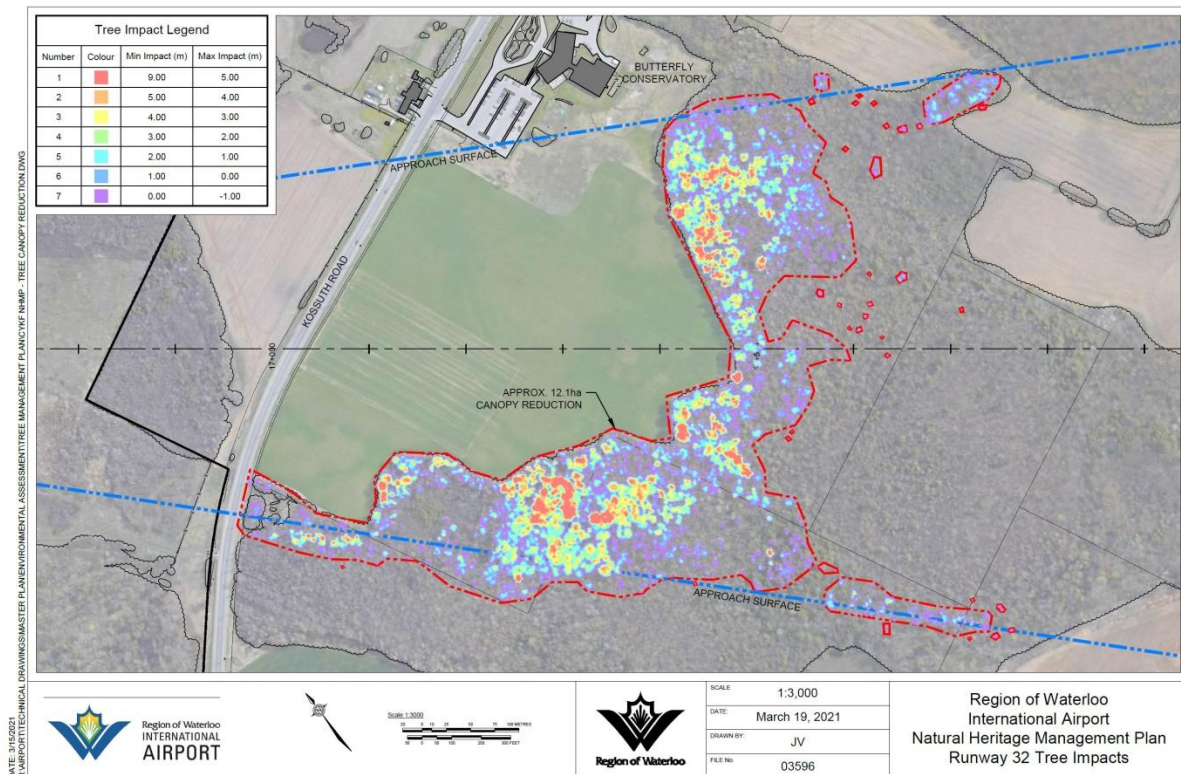


Fig. 1. Airport Runway 32 proposed tree impact on Conservatory lands

One of the portions of the Kossuth Wetland Complex which will be impacted is privately held by Butterflies Unlimited Corporation and managed by Cambridge Butterfly Conservatory Inc. The

impacted property is south of the airport in the City of Cambridge. The Project could result in the removal of 12ha of trees (approximately 2000) located within the Kossuth Wetland Complex. Cambridge Butterfly Conservatory has made its objections to the Project known in numerous discussions and correspondences with both the proponent and with Region of Waterloo Staff and members of Council of the Region of Waterloo.

Impact on the Kossuth Wetland Complex, a Provincially Significant Wetland

Background

The Kossuth Bog is located within, and is integral to, the Grand River Watershed. The 34.4 hectare Bog is part of a larger wetland complex known as the Kossuth Wetland Complex.

The Kossuth Bog wetland complex includes a number of wetland areas:

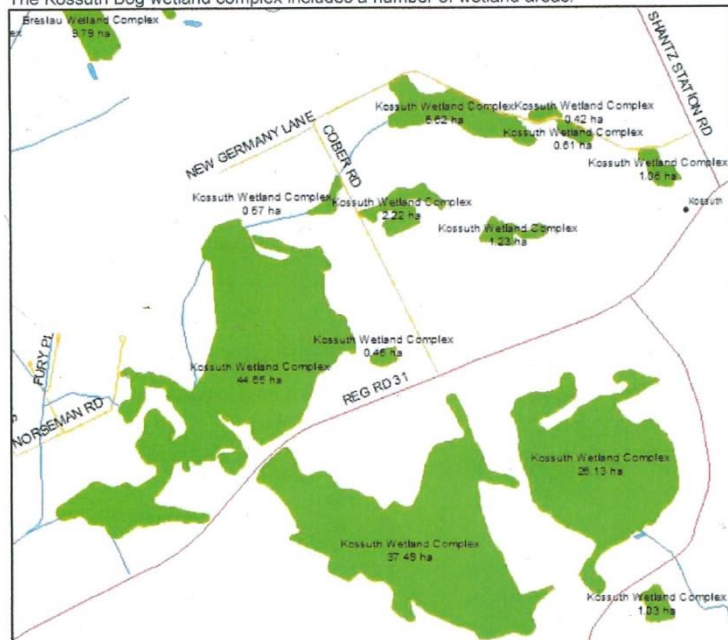


Fig. 2. Complete Kossuth Wetland Complex

The Kossuth Bog is one of the last remaining mature spruce bog forests in Waterloo Region. The Natural Heritage Information Network of the Ministry of Natural Resources and Forestry (MNR) has designated the site as a PSW and as an International Biological Programme Site (2015, p.92). The Region of Waterloo has designated the Kossuth Bog as an Environmental Sensitive Policy Area (ESPA) due to the presence of sensitive and provincially significant flora and fauna (CMC Consulting Inc. 2005). The Kossuth Bog Wetland Complex is also safeguarded in the Region of Waterloo Official Plan (2015).

Over the last 200 years, the Grand River Watershed has lost close to 65% of its wetlands primarily due to land conversion (Kaur B. et al. 2019). Along with deforestation and rapid settlement, the loss of wetland has resulted in severe water problems including flooding, drought, erosion and degraded water quality (CMC Consulting Inc. 2005). In the 1950's farmers installed a drainage ditch in the bog to convert it to agricultural use, but the conversion never occurred. In 2003 Cambridge Butterfly Conservatory convened an advisory panel of experts for the purpose of restoring the Kossuth Bog to its natural state. The advisory panel with funding from the Ministry of Natural Resources commissioned CMC Consulting Inc. to prepare a study to explore this restoration more fully. The Kossuth Bog: Wetland Restoration Action Plan was published in 2005 (CMC. 2005).

The advisory panel consisted of:

Al Murray, Ministry of Natural Resources
Chris Gosselin, Region of Waterloo (Ret)
Robert Messier, Grand River Conservation Authority
Ken Corniliese, Ministry of Natural Resources
April Souward, City of Cambridge
Bill Thomson, Cambridge Butterfly Conservatory
Doug Wilson, Cambridge Butterfly Conservatory

The Kossuth Bog Foundation

In 2013 the Kossuth Bog Foundation was formed with the express purpose of rehabilitating the Kossuth Bog and providing both environmental and social benefits through outdoor education and research opportunities. In 2016, Dr. Wayne Stevens from the University of Waterloo conducted research surrounding vegetation in this area, sponsored in part by the Kossuth Bog Foundation (with a loan from Cambridge Butterfly Conservatory) and the Region of Waterloo.

The Not-For-Profit Kossuth Bog Foundation works towards the following objectives:

- To restore The Kossuth Bog to its original state.
- To expand research and methodology involved in the restoration of a major bog/wetland.
- To assist students to conduct graduate projects in The Bog and to understand and learn how to maintain and sustain the natural environment.

- To teach, illustrate, inspire and educate the general public to understand the importance of wetlands, native plants, insects, butterflies, bees, waterfowl and other wildlife and their interaction with the natural area.
- To work with scientists, universities, environmentalists, governments and associations and relevant not-for-profit groups to understand the interaction of a Bog with climate change in order to restore the Bog and to manage it for a carbon sink and oxygen generator.
- To foster an awareness and an appreciation of our natural heritage through teaching, speaking and publication.
- To attract sponsors to support continued research and the promotion of sustainability of The Bog.
- To determine Species at Risk and to take steps to maintain and recover their numbers.
- To implement an Imperilled Butterfly Conservation Plan.
- To recognize that the natural vegetation, partial swamp and wetland nature of The Bog contributes to micro-climate moderation, maintain hydrological cycles, sustain a wide diversity of plant and wildlife species, supplies oxygen, absorbs carbon dioxide and with successful restoration can provide a special education and research programs.

Wetlands and Climate Change

Restoring, maintaining and preserving wetlands are and should remain a priority for governments at all levels. Wetlands are essential to the environment - they assist in moderating water flow by absorbing surface water runoff. Wetlands help in reducing flooding and they provide habitat to a diverse number of animals, songbirds, amphibians, reptiles and insects. The Grand River Conservation Authority (GRCA) places a high value on wetlands as they have the highest biodiversity of any landscape unit (GRCA. 2003).

But despite these benefits, the Wetland Conservation Strategy published by the MNR estimates that 72% of Ontario's pre-settlement wetlands have been lost or destroyed due to land conversion (2017 p.8). In March 2010, Ducks Unlimited Canada published the results of an exhaustive study on the loss of wetlands in Ontario. *The Southern Ontario Wetland Conversion Analysis* highlights the significance of protecting our wetlands and shows that by 2002 Waterloo Region had lost 74.4% of its pre-settlement wetlands (p.13).

The conservation and restoration of wetlands can be an effective tool to help protect communities and help Ontarians mitigate and adapt to climate change. While climate change poses a serious threat to

wetlands, the conservation of wetlands play an important role in mitigating climate change by reducing greenhouse gas concentrations. Wetlands regulate temperature, reduce the heat-island effect (the added heat that builds up in urban areas), slow the impacts of droughts and reduce flood and erosion risks that impact water quality. Forested wetlands, like that of the Kossuth Bog, are especially important because they can store significant amounts of carbon (MNR. 2017 p.9). A 2014 comparative study examined carbon sequestration in both drained and restored wetlands and found that restored wetlands increase the amount of carbon stored in the landscape (Enanga et al. 2014).

Biodiversity in Canada has been declining for the last 150 years and it is particularly acute in southern Ontario which has lost 85% of its forest cover (Krause and Hebb. 2018). This habitat loss is the main threat to wildlife including a number of Species at Risk. *The Kossuth Bog Wetland Restoration Action Plan* lists the species of flora and fauna and includes a variety of flora and fauna first listed in a biological assessment by Ohrner-Brown in 1975 (CMC Consulting Inc. 2005). See Appendix

Species at Risk and of Conservation Concern:

In a recent report (YKF Summary, 2021), several Species at Risk have been documented to have habitat in the area.

The following species are listed as threatened under Ontario's Endangered Species Act (ESA 2007) and have been documented to have habitat in the area:

- Bobolink (*Dolichonyx oryzivorus*)
- Eastern Meadowlark (*Sturnella magna*)
- Blanding's Turtle (*Emydoidea blandingii*)

The following species are listed as special concern under Ontario's Endangered Species Act (ESA 2007) and have been documented in the area:

- Eastern Wood-Pewee (*Contopus virens*)
- Wood Thrush (*Hylocichla mustelina*)
- Grasshopper Sparrow (*Ammodramus savannarum*)
- Snapping Turtle (*Chelydra serpentina*)

The Kossuth Wetland Complex is also a candidate habitat for three bat species listed as endangered under Ontario's Endangered Species Act (ESA 2007):

- Little brown myotis (*Myotis lucifugus*)
- Northern myotis (*Myotis septentrionalis*)
- Tri-coloured bat (*Perimyotis subflavus*)

A Special Note about Blanding’s Turtle:

On June 1 2020, a mature female Blanding’s turtle was observed on the Cambridge Butterfly Conservatory property, adjacent to the woodlot. An observation record has been submitted to the GRCA and MNRF, and we were notified by the MNRF that this is a new Regional record of this species.



Fig. 3. Blanding’s Turtle on Cambridge Butterfly Conservatory lands, June 1 2020

The Blanding’s turtle is listed as threatened under Ontario’s Endangered Species Act (ESA 2007), affording it and its habitat automatic legal protection. Threatened species are likely to become endangered if steps are not taken to address factors threatening them, and in the case of the Blanding’s turtle, threats include habitat destruction and fragmentation. The extension of runway 14-32 at Waterloo Region International Airport would cause the felling of an estimated 2000 mature trees, further threatening this species-at-risk and its habitat.

The Blanding's turtle is also listed as endangered under the IUCN Red List. This list is a critical indicator of the health of the world's biodiversity. Established in 1964, the International Union for Conservation of Nature's Red List of Threatened Species has evolved to become the world's most comprehensive information source on the global extinction risk status of animal, fungus and plant species. The Red List is used by wildlife experts, NGO's, educators, governments and environmentalist all over the world to manage and protect threatened species.

Vital PSW should be ineligible for offsetting, protected from future disturbances

The proponent insists on a "principal of 'no net loss'" and "offsetting/compensation activities" (YKF Summary. 2021 p.8). However, research shows there is no such thing as "no net loss", and that the Kossuth Wetland Complex, a designated PSW, should be ineligible for offsetting based on this status (MNR. 2017 p. 42).

Dan Kraus, a biologist with the Nature Conservancy of Canada described no net loss and offsetting, "In theory, we are switching out the old habitat for the new. We should end up with the same features and functions we had before, and have no loss. Unfortunately, no net loss rarely works this way. In most cases, the well-meaning objective of no net loss results in the loss of habitat area, quality and function" (Kraus D. & Wilson R. 2015). In the same article, he goes on to say this practice may do more harm than good.

"The other issue of no net loss is that it fails to solve problems of habitat loss, degradation and species at risk that already exist. In a country where we have lost large amounts of wetlands, grasslands and forests in the southern regions where Canadians live, no net loss and the incremental continued losses that occur under this policy just continue a trend of habitat declines. In a twisted conservation outcome, it may even increase this loss because policies to protect key areas could be watered down under the auspices that we can offset any impacts" (2015).

The Kossuth Wetland Complex is one of the last remaining spruce bogs in the Region. Bogs are "extremely rare in southern Ontario" and in many cases, they can be thousands of years old (MNR, 2017). As part of Action 2: Creating No Net Loss policy for Ontario's Wetlands, *in The Provincial Wetland Conservation Strategy for Ontario 2017-2031*, one of the key considerations was "Defining wetland functions, and identifying the types of wetlands and functions that can or cannot be offset. Some sites,

features and habitats will be ineligible for offsetting based on their status (i.e., provincially significant wetlands, coastal wetlands protected by the PPS, 2014) (MNR, 2017 p. 42).

As we understand it, and as it is detailed in this Strategy, “all decisions affecting land use planning matters” shall be consistent with “the Provincial Policy Statement 2014 (PPS)” (p.14). However, “the PPS prohibits development and site alteration in all provincially significant wetlands (PSWs) throughout much of southern and central Ontario... Development and site alteration is prohibited on lands adjacent to PSWs...unless it has been demonstrated that there will be no negative impacts on the wetlands or their ecological functions.” (p.14)

But we know, and as is noted in the Initial Project Description, there will be negative impacts on the wetlands, specifically the Kossuth Wetland Complex, a designated PSW.

Lack of Clarity and Transparency

Throughout CBC’s engagement of the proponent, there have been many instances where we have felt there has been a lack of clarity and transparency. In September 2020, Mr. Bill Thomson, Chair of the Kossuth Bog Foundation, and Director and shareholder of Cambridge Butterfly Conservatory, submitted a report to Waterloo Regional Council regarding the Project, and in October of the same year, Doug Wilson, President of Cambridge Butterfly Conservatory submitted a letter to council expressing our concerns. The Region’s sense of ascendancy in this matter is of great concern to us in that neither Thomson’s report nor Wilson’s letter have ever been formally acknowledged or answered by Council.

The proponent goes to great lengths to advance an economic case for the extension of runway 14-32 but we find the proponent has avoided providing an accurate, graphic and detailed explanation of the potential negative impact this project will have on the Kossuth Wetland Complex. Furthermore, the proponent consistently uses language in the Initial Project Description that, while not necessarily misleading, does not provide the public with a truly accurate description of the extensive negative impact on a PSW, nor provides any context for the destruction of this wetland. The proponent often uses language such as *impact on the environment*, *reducing impact on treed areas*, and *mitigation measures and strategies* without expressly describing the true nature of the impact.

It is our opinion the public would have been better served if from the outset the proponent had used true, accurate, graphic and fully descriptive language. The proponent submits there is “widespread support for this project” (Regier R. & YKF. 2020). We submit, had the proponent actually described publicly the impact as *the potential felling, topping or pollarding of an estimated 2000 trees and the permanent disruption of Species at Risk habitat in one of the last remaining spruce bogs in the Region*, and placed this dialogue in context, that the public would be much better informed and there would be much less support for the project.

September 8, 2020 IAAC Engagement Session 1 3:00pm

1. At this Engagement Session the proponent presented a slide discussing the environmental impact of runway extensions. The proponent’s remarks, along with the accompanying slide, discussed briefly the impact on the natural environment related to a small area within the airport property. There was no mention made of the impact extending runway 14-32 would have on the Conservatory lands, that is the potential felling of 12ha of trees in the Kossuth Wetland Complex. Had Cambridge Butterfly Conservatory not questioned the proponent, appallingly, no mention of the effects on this Provincially Significant Wetland would have been made. The public would have been in the dark.
2. During this Engagement Session the proponent also failed to mention the results of an archaeological assessment that was conducted on the Conservatory lands prior to construction (Ministry of Culture, Tourism and Recreation License #97-037). This archaeological assessment indicated the presence of a lithic scatter that should be protected for future, possible archaeological digs (Knight D.H. et al., 1998). This archaeological site runs along the woodlot edge and would most definitely be disturbed should any tree felling occur.
3. Cambridge Butterfly Conservatory additionally questioned the proponent about the number of diversions a year but their answer was vague and unsubstantiated.

Initial Project Description:

Cambridge Butterfly Conservatory is of the opinion our concerns have not been fully and accurately reflected in the Initial Project Description. The document refers to “ongoing discussions and

correspondence” (YKF, p. 11), however it appears to minimize our concerns by suggesting these concerns have only to do with “removal of trees on a woodlot and wetland on their property” (p.11), when in fact our concerns surround the enduring and devastating effect this project could have on a PSW.

- ❖ It is our opinion that all of our related correspondence with the proponent and Regional Council should be made public and our concerns noted fully and accurately.

Insufficient Evidence to Support Runway Extensions

The public has been inculcated with a persistent argument from the proponent that extending runway 14-32 is necessary because of:

1. Diversions to other airports because of inclement weather and,
2. Allowing YKF to close runway 08-26 for repairs.

The Initial Project Description reports, “Currently AGN III aircraft, such as the Boeing 737 and Airbus 320 series, can only operate on Runway 08-26. Extending Runway 14-32 will provide these aircraft with an alternate runway to use during poor weather and high crosswind conditions” (YKF, p.1). We have asked airport management several times to provide evidence to support the number of times a diversion has been necessary “*during poor weather or high crosswind conditions*”, but at the September 8th, 2020 IAAC Engagement Session, airport management answered that this information is “*not readily published. About 12 redirects/year.*” However, our query of *the Canadian Aviation Daily Occurrence Report* indicates only three planes have been redirected over the course of the last 10 years – none for inclement weather (CADORS).

We do not purport to be aviation industry experts and, as such, we may not be privy to all sources of information, but this lack of transparency is troubling. What we have been able to ascertain is that larger airplanes would rarely be diverted because of poor weather. This would leave one to believe that smaller charter airplanes may be most affected by inclement weather. Charter flights typically have very few passengers, so the inconvenience to passengers the proponent refers to would not equate to the potentially devastating environmental effects the Project could have on the surrounding natural wetlands.

Given the strength the proponent has attributed to this argument for expansion, it is incumbent upon the proponent to back this assertion up with reliable and verifiable facts.

We respectfully ask that the proponent be required to provide the following:

- ❖ Evidence of the number of recorded redirects to other airports that have occurred in the last five years as a result of inclement weather
- ❖ Information regarding the type of aircraft that were diverted as a result of inclement weather in the last 5 years
- ❖ The number of recorded passengers affected by diversions as a result of inclement weather in the last 5 years

Not Consistent with Regional Official Plan

The Region of Waterloo is recognized as a leader in the development of official plans, having implemented the first Regional Official Plan (ROP) approved by the Province in 1975. What was notable about this first official plan was that it contained within it a number of important policies, not the least of which were the policies concerning the environment. So ground-breaking was this official plan, that The Honourable John Rhodes, then Minister of Housing, recognizing the significance of this plan, travelled to Kitchener to a council meeting to sign the Official Plan.

This first ROP was adopted by Council on December 7, 1976 (by-law 76-76) and in this, The Region of Waterloo Official Plan enshrined over 70 ESPA's into the Plan, ostensibly, for safe keeping. This was a remarkable achievement and demonstrated Regional Council was committed to protecting the environment, our woodlots and our wetlands.

One of the key elements of the ROP, as currently detailed on the Region's official website, is the commitment to "protecting our drinking water and significant environmental areas," (Region of Waterloo Webpage. 2020). Yet, given the opportunity for Waterloo Regional Council to do just that – protect a significant environmental area, it has chosen to ignore this most fundamental of elements.

Consider as well, another of the key elements detailed here, "increasing the quality of life of citizens of the Region" (2020). One need only look to the complaints and comments from the citizens of Breslau with respect to airplane noise to question whether increased noise from more airplane traffic which,

would encroach further towards the village of Breslau, would increase their quality of life. In 2019, The Record published an article that noted “one of the most controversial issues with the Breslau airport has been noise” (Desmond P. 2019).

The Greenlands Network

Outlined in Chapter 7 of the most recently adopted ROP (the Plan), is an overview of The Greenlands Network. The Greenlands Network provides for the Region to “maintain, enhance or wherever feasible, restore the Greenlands Network” (2015. p.93). The Plan goes on to list objectives for achieving this, one of which is to “Increase forest cover in appropriate locations to achieve an overall target of 30 percent or more of the region’s total land area” (p.94).

Other sections of the Greenlands Network portion of the Official Plan also safeguard and protect the environment, specifically: 7.B.16 (b), which clearly states that if an infrastructure project would “result in widespread adverse impacts to the environmental features and ecological functions of the Environmentally Sensitive Landscape or result in long-term damage to its significant features” provides for the Region to “Not support the undertaking” (2015. p.102).

7.C Core Environmental Features

Chapter 7 of the ROP also speaks about the importance of the Region’s natural heritage. Here, they introduce the Core Environmental Features as “those environmental features identified as being provincially significant or regionally significant” (p.105). These features are the most significant elements of the regional landscape in terms of maintaining, protecting and enhancing biodiversity and important ecological functions.

The Core Environmental Features Designation applies to lands that meet the criteria as:

- (a) Significant Habitat of Endangered or Threatened Species
- (b) Provincially Significant Wetlands
- (c) Environmentally Sensitive Policy Areas
- (d) Regional Significant Woodlands; or
- (e) Environmentally Significant Valley Features.

Section 7.C.4 speaks directly to PSWs such as the Kossuth Wetland Complex: “Provincially Significant Wetlands, as identified by the Province, will be considered Core Environmental Features for the

purposes of this Plan” (p.106). Section 7.C.6 further contemplates the protection of our natural heritage features when it considers “Regionally Significant Woodlands” (p.107).

7.E Supporting Environmental Features

In Section 7.E Supporting Environmental Features, the ROP further underscores the importance of significant environmental features when it refers to “Supporting Environmental Features play an important role in maintaining the ecological functions provided by the Greenlands Network and will be maintained, enhanced or, wherever feasible, restored” (p.110).

And finally section 7.E.6 recognizes, along with the GRCA and other stakeholders, the importance of “linkages,” or areas that are “intended to provide opportunities for plant and animal movement among environmental features” (p.111). This policy is especially important for the Kossuth Wetland Complex as one can see from the map shown in Fig. 2 that it is a series of sensitive areas where the linkages should be enhanced, not negatively impacted, as the felling, topping or pollarding of the trees in the woodlot would cause.

It is clear that the policies within the council-adopted Regional Official Plan were designed to protect, maintain and enhance our natural heritage sites, and most specifically, those PSWs such as the Kossuth Wetland Complex.

The Future of Airline Travel Has Not Been Adequately Addressed

In the report, *A Review of Waterloo Region International Airport Master Plan* that Mr. Thomson submitted to Council (Thomson, 2020), attention was drawn to one of the single most important studies done in Ontario regarding airports: The KPMG Pickering Lands Aviation Sector Analysis (2020). This analysis, Commissioned by Transport Canada and released in 2020, regarding the state of airports in southern Ontario, provides ample evidence that expanding Waterloo Region International Airport may not be necessary, yet airport expansion proponents have chosen (publicly at least), to ignore this study (KPMG, 2020). In fact, one of the arguments airport expansion proponents use, as Mr. Thomson points out, is this notion that Pearson will run out of capacity, when in fact Pearson has plenty of capacity and with Pickering Airport coming online, that capacity will only increase as many of the smaller feeder lines move to Pickering (2020, p.22).

Airports across North America are finding cost effective strategies that meet the needs of increased air travel and do not require extended or additional runways (Thomson. 2020). By “upgrading tower technology and training tower staff to land airplanes up to and including 3-minute intervals as needed,” airports can “continue expanding aircraft movements on existing runways at little or no extra cost...which is far less expensive and has much less impact on the public and the environment than building new runways or extending existing ones” (2020. p.9-10).

Furthermore, the airline industry is in a state of uncertainty, the likes of which have not been seen in our lifetime. In a recent article in *The Journal of Air Transport Management* titled *Risks, resilience and pathways to sustainable aviation: A COVID-19 perspective*, author Stefan Gosling, professor of Tourism Research at Linnaeus University, concludes in his summary, Thinking the unthinkable, “this discussion has revealed insurmountable conflicts inherent in the proposition of continued volume growth and a reduction in risks and vulnerabilities. Hence, a reorientation is necessary that includes the possibility of a shrinking of the global air transport system to increase its desirability for society. It is also plausible, COVID-19 has forced many airlines to reduce their fleets, retire old aircraft, or stop serving long-haul destinations” (2020).

We ask that a complete review of the 2017 Airport Master Plan with a view to protecting the environment be taken to avoid unnecessary runway extensions and the unnecessary felling of an estimated 2000 mature trees.

Potential Negative Impact on Cambridge Butterfly Conservatory’s Brand and Services

Use of Wetland Complex for Education and Research

When we began the process of developing and building Cambridge Butterfly Conservatory close to 30 years ago, our shareholders and directors made a commitment to “conservation, education and research, and to provide visitors to the conservatory with a truly unique, affordable and educational family experience”. This was not some romantic aspiration, but a genuine pledge to serve our community, to protect and conserve the lands that we were entrusted with, to devote time and

resources to research and above all to educate, enrich and enhance the lives and wellbeing of all who visit the Conservatory.

We have exceeded in achieving all these objectives. Cambridge Butterfly Conservatory is, in the vernacular of the tourism industry, a “significant demand generator,” drawing many tens of thousands of visitors every year to the Region, (pre COVID-19 we were the destination for over 130,000 visitors a year – 40% of which came to us from outside the Region of Waterloo). We managed to accomplish much of this success through private shareholder investment, the guidance of a committed board of directors, devoted, passionate staff, strong management and, most importantly, with the support of our community.

In building the Conservatory, we held ourselves to a high standard of compliance. Our builder worked in partnership with Union Gas and Enermodal Engineering to create an energy efficient building, pulling on the design and energy expertise from the Design Advisory Program through Union Gas, which “encourages builders to try new approaches to energy efficiency” (Grand Actions. 2001. p.5). In 2001, on the day we opened to the public as Wings of Paradise, Natural Resources Canada honoured us with an award of recognition for adopting an energy efficient design aimed at reducing greenhouse gas emissions (2001. p.6). It is our intention that our legacy is that we conserved, not destroyed.

It is this very standard that we struggle to uphold now in the face of airport expansion. This standard is the touchstone that speaks to who we are as an organization, it is part of our brand and most importantly it is a standard that our patrons expect us to maintain.

Impact from Noise on Future Plans for Cambridge Butterfly Conservatory

The proponent suggests that, “while the aircraft related noise environment around YKF will change because of the Project, the change can be considered not significant when federal, provincial and local municipal planning guidelines and noise metrics are considered. All the sensitive land use receptors will remain below 30 NEF” (YKF. 2021. p.88).

Noise Exposure Forecasts (NEF) were developed primarily for Canada Housing and Mortgage Corporation (CHMC) parameters for sound insulating residential buildings and do not take into account the impact increased noise levels will have on outdoor activity. Should the extension of runway 14-32 be implemented, the NEF will have a significant negative effect on Cambridge Butterfly Conservatory’s

existing visitor experiences (trails, outdoor family gatherings and educational programs), as well as on future plans for the outdoor space at the Conservatory, resulting in an incalculable loss of future revenue.

All of the following plans for outdoor use will be negatively impacted by increased noise levels as well as loss of a significant portion of our woodlot:

The Woodlot

The woodlot behind the Conservatory, especially the subject 12 ha, has always been a backdrop to our operations, well before runway extensions were contemplated – it is part of what makes the Conservatory unique, enhances our commitment to education, research and conservation. It is part of our brand.



Fig. 4. Spruce Bog Woodlot at the Kossuth Wetland Complex on Conservatory lands where the felling of an estimated 2000 trees has been proposed as part of the Project.

Striking a balance between using the woodlot as part of an educational experience at the conservatory and maintaining the woodlot's integrity is something we have always taken seriously. Our future plans for the property include the development of nature interpretation signage and hiking and cross-country skiing trails that border on but not penetrate the woodlot.

In 2019 Cambridge Butterfly Conservatory applied for a grant through Explore Waterloo Region's access to the Municipal Accommodation Tax for a Christmas-themed winter activity to offset slow visitor traffic in the shoulder season. Santa's Cabin in the Woods was meant to include the construction of a small log cabin, again on the edge of the woodlot to house Santa and Mrs. Claus. Tractor and/or horse drawn wagons would deliver families to visit Santa.

Any loss to our woodlot threatens our future development plans and potential revenue opportunities which could result in a significant and enduring loss of revenue.

Outdoor Recreation

Cambridge Butterfly Conservatory retained a landscape architect to develop a landscape design for gardens and trails on our property, with the woodlot serving as a backdrop. We plan to continue to develop additional outdoor recreation opportunities for the community, in addition to our pollinator garden we have in front of the Conservatory. We know from experience our guests visit us to be able to enjoy nature and our plans have always included gardens and more outdoor space for them to enjoy.



Fig. 5. Visitors to CBC enjoy the intentionally planted pollinator gardens.

Currently we have developed walking trails through the naturalized area directly behind the Conservatory and bounded by woodlot on two sides. Here our guests enjoy picnics, short hikes, bird and wildlife watching.

Any loss to our woodlot, or increased noise disruption threatens our future development plans and potential revenue opportunities which could result in a significant and enduring loss of revenue.

Outdoor Events

Our woodlot currently serves as an added selling feature for our outdoor events, including weddings. We have limited space inside the Conservatory and it is our intention to continue to develop the grounds behind the Conservatory, with the woodlot as a natural backdrop. This design includes the construction of an amphitheatre-like structure for outdoor lectures and performances. The area would also contain various wedding photograph backdrops to enhance the guest's experience and an enhanced seating area for families to gather together. Increased noise and loss of our woodlot will directly affect our current and future business prospects, resulting in considerable financial harm.



Fig. 6. Newly wedded couple embrace in a quiet moment amongst the natural backdrop of the woodlot at Cambridge Butterfly Conservatory. Photo credit: Cara Chapman Photography, 2020

Conservation Research

Cambridge Butterfly Conservatory is actively participating in efforts to re-establish the endangered Mottled Duskywing butterfly across suitable habitat in Ontario. This is the first endangered butterfly reintroduction program in Ontario in history, and Cambridge Butterfly Conservatory plays a critical role in the recovery of this endangered butterfly.

The Mottled Duskywing was classified as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 2012 and in Ontario by the Committee on the Status of Species at Risk in Ontario (COSSARO) in 2013, affording it protection under the Endangered Species Act, 2007. Mottled Duskywing is Ontario's only endangered species of butterfly and the province has produced a recovery strategy for the species (Linton, 2015). For the past 3 years, Cambridge Butterfly Conservatory has honed a captive rearing protocol that will support a re-introduction of this species to the Pinery Provincial Park in summer 2021. The Recovery Team is also preparing for a reintroduction of Mottled Duskywing to the Norfolk Sand Plains in a formally occupied location and a nearby created habitat by the Nature Conservancy of Canada. The Recovery Team will also consider site-specific population augmentations with captively reared Mottled Duskywing in consultation with researchers and land managers as we build our knowledge and collect data on how naturally occurring and reintroduced populations. It is intended that the work the Recovery Team is doing now to expand the range of self-sustaining Mottled Duskywing populations in Ontario will directly inform future recovery efforts for other butterfly species at risk in the province and beyond.

Currently, all conservation research is conducted from a laboratory using a portable trailer. Our future plan includes the strategic objective of developing a permanent conservation facility. The woodlot is a fundamental backdrop from which we can offer educational and stewardship focused programming.

As well, captive rearing efforts rely heavily on *in situ* host plant supply. For over a decade we have managed two *in situ* plots of host plants that support our conservation research work, and both plant species (Wild Lupine and New Jersey Tea) require part-shade or shade growing conditions, shade that is made possible by the close proximity of the woodlot to our conservation plots. The felling, topping or pollarding of trees in our woodlot would have a direct negative impact on our current endangered species conservation efforts.



Fig. 7. Left: Inside the Conservation Lab at Cambridge Butterfly Conservatory. Right top: The endangered Mottled Duskwing butterfly. Right bottom: Host plant.

Cambridge Butterfly Conservatory has also funded conservation research projects on the extirpated Karner Blue butterfly. Researchers at the University of Guelph conducted a two-year study to determine whether or not Ontario could once again support healthy populations of the Karner blue butterfly, a species that became extirpated from Ontario in the early 1990's as a result of extensive habitat loss and alterations (Jarvis 2014). As well, Cambridge Butterfly Conservatory sponsored research to determine the conservation needs of the White Mountain Arctic Butterfly in New Hampshire (Gradish et al. 2015). The White Mountain Arctic Butterfly was recently classified as imperiled, meaning it is considered a rare species and vulnerable to extinction. Because of its very specific habitat requirements, climate change could negatively impact this butterfly species.

Cambridge Butterfly Conservatory asserts that our development, our plans and our commitment to this community pre-dates any planned extension of runways or airport expansion and that the impact of noise as well as loss of a significant portion of our woodlot on these and all other outdoor activities at Cambridge Butterfly Conservatory would result in a significant and enduring loss of revenue.

About Cambridge Butterfly Conservatory

Cambridge Butterfly Conservatory opened in January 2001 and is an important asset, economic driver and demand generator for this community. And most significantly, we are important to the health and mental wellbeing of the more than 130,000 visitors who enjoy our facility every year. We are an important and popular tourist and educational facility for the Region of Waterloo and for the province of Ontario. Approximately 40% of our guests visit us from outside the Region.

Cambridge Butterfly Conservatory is recognized as one of Ontario's iconic attractions. With this status the City of Cambridge and The Regional Municipality of Waterloo benefit, not only from the ripple effect of dollars spent, but also from the social and traditional media awareness garnered through our advertising, promotional campaigns and word of mouth that reaches far beyond our Regional border. Employing approximately 45 people in full and/or part time positions, providing summer employment for as many as 20 secondary school and university students, the Conservatory also provides opportunities for over 20 volunteers.

Since opening in 2001, over 300,000 school children (the majority of which reside in the Region of Waterloo), have visited the Conservatory to participate in our pre-school, elementary and secondary school educational programs. The Conservatory also manages a robust out-reach program visiting libraries, schools, camps, seniors' homes and community centres. The Conservatory is frequently visited by seniors' homes as well as other care facilities. For the past three years we have provided accessible free programming about Species at Risk, focusing on the Monarch butterfly as our flagship species. This free, curriculum-based program was supported by an Environment Canada grant and 30,000 school children across Canada participated in our programming.

Cambridge Butterfly Conservatory actively funds and implements butterfly conservation research. In 2019 Cambridge Butterfly Conservatory initiated Ontario's first ever endangered butterfly captive rearing program in cooperation with The University of Guelph, National Science and Engineering Research Council, Ministry of Natural Resources and Forestry, Wildlife Preservation Canada and others. In 2016, shareholders of Cambridge Butterfly Conservatory founded The Kossuth Bog Foundation to work with the Grand River Conservation Authority (GRCA), Ministry of Natural Resources and Forestry (MNR), Environment Ecological Advisory Committee (EEAC) to Regional Council and the University of Waterloo and Laurier to restore the Kossuth Bog.

In Summary

Cambridge Butterfly Conservatory acknowledges, accepts and is supportive of progress and growth in Waterloo Region. We acknowledge that airport expansion in some form may be necessary, but we are steadfast in our opposition to the extension of runway 14-32 as it will have a tremendously harmful and enduring effect on one of the last remaining Spruce bogs in the Region, a Provincially Significant Wetland, the Kossuth Wetland Complex. Cambridge Butterfly Conservatory stands firm on the commitment our founders made to conserve, protect, educate and to enrich the lives of our community and we remain in opposition to the extension of runway 14-32.

This costly and unnecessary project will have a devastating effect on a PSW - something this Region cannot afford. Waterloo Regional Council has a responsibility to review the 20 Year Airport Master Plan with an objective lens and, in doing so, a solid case may be made for expansion and upgrades to the tower and terminal building that will support a strong regional airport and that does not include unnecessary runway extensions or the felling of an estimated 2000 mature trees and the disruption of an environmentally sensitive area.

Taking into account the detrimental effect on the area's ecology and the impact extending runway 14-32 will have on a Provincially Significant Wetland, we believe the proponent should:

- ❖ Submit to a complete an Environmental Impact Assessment.
- ❖ Provide evidence that supports the need for runway extensions as a result of inclement weather.
- ❖ Undertake a complete review of the 2017 Airport Master Plan with a view to protecting the environment, not destroying it.

We are proud to be a part of a community that is committed to progress, and as we continue to confront climate change we must, as a community, recognize the important role wetlands play in mitigating climate change and continue to seek progress that prioritizes protecting Ontario's wetlands. We remain committed, and sincerely hope that all levels of government are too.

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Right top: The endangered Mottled Duskwing butterfly. Right bottom: Host plant.

Appendix

Plants	The Sedge Species	Carex synhnocephala
	Bristly Sarsaparilla	Aralia hispida
	Wild Sarsaparilla	Aralia nudicaulis
	Spinulose Shield-fern	Dryopteris austriaca
	Ground Cedar	Lycopodium obscurum
	Mosses with sphagnum occurring frequently	Sphagnum sp.
	Pink Moccasin Flower	Cyprideum acaule
	Spatulate-leaved Sundew	Drosera intermedia
	Grey Birch	(Betula populifolia)
	White Birch	Betula papyrifera
	White Spruce	Picea glauca
	Black Spruce	P. mariana
	Tamarack	Larix laricina
	White Pine	Pinus strobus
	Balsam Fir	Abies balsamifera
	Skunk Currant	Ribes glandulosum
	<i>*Not reported elsewhere in Waterloo Region</i>	
	Greenland tea	Ledum groenlandicum
	Swamp Blueberry	Vaccinium corymbosum
	Club mos (many species)	Notably, Lycopodium clavatum
Many species of blueberries:		
• Mountain Holly	Nemopanthus mucronatus	
• Labrador Tea	Ledum goroenlandicum	
• Wintergreen	Gaultheria procumbens	
Mammals	Snowshoe Hare	Lepus americanus
	White-tailed Deer	Odocoileus virginianus
	American Mink	Mustela vison

Insects	Sphinx Moths (2) <i>*uncommon</i>	
	o Clemens Hawkmoth	Sphinx lusiitiosa
	o Lettered Sphinx	Deidamia inscripta

Birds	Warbling Vireo	Vireo glivus
	Red-headed Woodpecker	Melanerpes erythrocephalus
	<i>*Currently listed as Endangered by the Committee on the Status of Endangered Wildlife in Canada</i>	
	White-throated Sparrow	Zonotrichia albicollis
	Restart	Setophaga ruticilla