

# Education Tools for Mitigating Human-Wildlife Conflict in Urban Areas

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## Abstract

This major project report represents a substantive effort to create educational tools and opportunities for a wide range of audiences in hopes that an increase in ecological knowledge will help reduce instances of human-wildlife conflict in urban areas. By increasing ecological knowledge, the hope is to inspire a greater sense of awareness and care for the wild animals with which we co-occupy space. Toronto Wildlife Centre is a registered charity and a designated wildlife rehabilitation and rescue centre, offering care to sick, injured and orphaned wildlife found by members of the public. Working collaboratively with Toronto Wildlife Centre has allowed me to gain a nuanced understanding of human-wildlife conflicts in urban areas and contribute meaningfully to their educational programs. This Major Project comprises a suite of tools with which to provide education surrounding human-wildlife conflict in urban areas to a wide range of people. The Bounce Back Fact Sheets are for members of the public who find themselves in the midst of human-wildlife conflict. The educational blog posts are for people who are interested in learning more about urban wildlife. Finally, the high school presentations are aimed at promoting a wider appreciation of wildlife, an understanding of human-wildlife conflict in urban areas and steps we can take in our communities to move towards a human-wildlife coexistence. Each presentation will include how they meet curriculum requirements, allowing for teachers to integrate wildlife education and community partnership, whilst operating within the parameters of the curriculum. These educational tools address the need for pre-emptive education as well as offer education to those who have already found themselves in a conflicting situation with wildlife. The topics covered in the blog posts offer ecological knowledge about local Ontario species, what can be expected from them, and how we can help them succeed in urban environments. Topics covered are seasonally appropriate and are aimed at providing a resource for people who wish to learn more about wildlife or as a reference when facing situations such as a turtle crossing a roadway or discovering a bird nest. This Major Project represents a multi-faceted approach to scientific outreach. The objective of this work was to raise awareness of urban wildlife and the difficulties they face to promote sustainable coexistence of humans and non-human animals in an increasingly urbanized world.

## Foreword

The Plan of Study around which this project was centered is comprised of three main areas of concentration, including: human-wildlife conflict, wildlife management and biological conservation. The overall focus of my degree is developing strategies for mitigating human-wildlife conflict. Concurrently earning a diploma in Environmental and Sustainability Education compliments this, as education is a major mitigation strategy that I have explored in depth. Through the process of creating this portfolio I have examined in depth the concepts of human-wildlife conflict, wildlife management and biological conservation. Education and outreach are the main mitigation strategies used by developing education tools that can provide information about wildlife species to members of the public, who have experienced human-wildlife conflict and those who may experience it in the future. These tools are meant to promote sustainable human-wildlife coexistence. After completing experiential learning at Toronto Wildlife Centre, I was able to apply my knowledge of the negative impacts of human-wildlife conflict on non-human species to create educational presentations, blog posts, bounce back fact sheets and a formal letter to City of Toronto planners and members of parliament that explain the threats posed to wildlife in urban areas. These threats include habitat loss, degradation and fragmentation of habitat that can escalate wildlife into conflicting situations with humans. By promoting the maintenance of ecosystems and communities, as well as the species that reside within them, we can aid in protecting biodiversity. Throughout my graduate work I have sought to expand my understanding of human-wildlife conflict in urban areas and how we might mitigate these issues using various forms of education. The components produced from this project represent my cumulative and collaborative efforts to create educational messaging and platforms about urban wildlife. By first situating this work within the literature, I sought to explore the discourse surrounding human-wildlife conflict, the meaning behind the use of the word *conflict* and how we may move towards a human-wildlife coexistence.

## **Dedication**

This major project portfolio is dedicated to all the animals that have been harmed by conflicting situations with humans. The hope is that this work will inspire a generation of care for the wild species that we share our spaces with. May we move towards peaceful co-existence.

## **Acknowledgements**

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I am particularly thankful for my time and experiences with Toronto Wildlife Centre. The staff there, including my supervisor Victoria Badham and the other staff that I have worked closely with in the Emergency Wildlife Hotline have taught me so much about human-wildlife conflict and wildlife rehabilitation in urban areas.

I wish to acknowledge the platform provided by Wild Birds Unlimited. By working as a Social Media Specialist for them I was able to contribute educational blog posts to their Nature Notes blog and reach a broader audience.

I would like to offer special thanks to my parents, Fred and Gail Kerrison, who have supported me endlessly in my journey to complete this project and Master's degree, and have fostered my care for wildlife and conservation from a young age.



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## 1. Literature Review

Human-wildlife conflict occurs when wildlife requirements overlap with human populations, creating costs for both groups (Mardaraj & Sethy, 2015). Driving forces such as human population growth, species habitat loss, urbanization, degradation and fragmentation have led to increased instances of human-wildlife conflict. However, the term *conflict* generally refers to two parties acting as conscious antagonists (Peterson, Birckhead, Leong, Peterson, & Peterson, 2010). To frame wildlife as *consciously* antagonizing humans is anthropomorphism. Conflict usually arises based on an interpretation by a given actor of a given situation. Most instances that are referred to as human-wildlife conflict are based on a human perception that wildlife is threatening something they care about, whether that be property, health and safety or food sources (Conover, 2002). Some of the major themes of human-wildlife conflict include the character of pests and disease discourse as well as threats posed by wildlife including “dangerous” animals (Schelhas 2004). When using the term human-wildlife conflict, we are referring to conflicts that may be real or perceived, economic, aesthetic or social in nature (Messmer, 2000). Issues framed as human-wildlife conflict are often representative of human-human conflicts, stemming from differences in opinion or culture surrounding the management of wildlife (Dickman, 2010).

Distefano (2005) goes into detail about the management strategies and issues currently associated with human-wildlife conflict. The chapter cites the definition of human-wildlife conflict as occurring when there is an overlap of wildlife requirements with human populations, which generate costs for both groups (Distefano, 2005). It also reinforces the principle that species that are the most exposed to human-wildlife conflict are also those that are most prone to extinction, mostly due to injuries and death stemming from conflict with humans. These deaths and injuries are both accidental and incidental in nature (Distefano, 2005). Human-induced mortality affects populations, but also has broad environmental impacts on ecosystem equilibriums and biodiversity (Mardaraj & Sethy, 2015). The impacts on humans include a negative effect to their welfare, safety and personal health and can include costs that are both

economic and social in nature. We must seek to preserve species while mitigating wildlife damage (Distefano, 2005).

Wildlife damage can be described as any perceived negative impact associated with wildlife (Conover, 2002). However, solutions to wildlife damage problems differ from methods to resolve the human-human conflicts that arise from trying to decide on appropriate wildlife management efforts. For example, when coyotes are in a given neighbourhood there tends to be polarized ideas of how to mitigate this issue (Redpath et al., 2013). It can be argued that by referring to instances of wildlife damage as human-wildlife conflict, we are collectively perpetuating an anthropomorphic view that animals share our consciousness and understand our values and interests. The problem with this rhetoric is that it places wildlife as an entity that cannot represent themselves, in a role of antagonist. If wildlife is seen as antagonistic, it then makes sense that one would direct anger, fear, frustration and even retaliation at such species. It is in this way that we must recognize the consequences of using human-wildlife conflict to describe such interactions. What we want to avoid doing is framing wildlife only as a threat to humans, rather than something that can contribute positively to human welfare. Albeit difficult, it is important to direct efforts towards the potential for sound co-existence between all species even when needs are contradictory (Peterson et al., 2010). Often, what needs to be targeted is a change in perception. It is argued within the literature that the very phrase “human-wildlife conflict” is detrimental to the goal of coexistence and should be reframed to better represent human-wildlife relationships (Peterson et al., 2010).

In general, we can group interactions relevant to wildlife management as wildlife interactions with people, wildlife interactions with the environment, and interactions among people that result from wildlife (Riley et al., 2002). The effects of these interactions are viewed as either positive or negative, depending on a person’s stake. Different stakeholders, with differing values, can have very different evaluations of the same event. Arguably, managing human-wildlife conflict can be viewed as mitigating negative impacts of wildlife with respect to human values (Riley et al., 2002). Education is a form of *conflict management* which can be defined as eliminating conflict by creating a resolution and reducing the negative impact of conflict using management techniques (Redpath et al., 2013). Alternative solutions should be

explored through technical, *educational*, and legislative means. Creating educational tools is about creating a dialogue, as conflict management is about bringing parties or stakeholders face to face to discuss reasonable solutions. A well-informed public may be the most important way to preserve native species and decrease instances of human-wildlife conflict (McKinney 2002). Individuals that live in urban environments often do have an appreciation for urban species, such as birds (Clergeau et al. 2001). However, potential opportunities for conservation and peaceful coexistence are often hindered by a lack of ecological knowledge. For example, a study of high school students in Texas showed that 60% of the students misidentified an opossum as a rodent and only 2% knew of potential effects that humans have on raccoons. Human-wildlife conflict is currently one of the leading threats to wildlife species, particularly in an urbanizing world (Dickman 2010). As cities expand, so too do the number of animals that take up residence within them or along their borders (Leong, 2009). Species that are threatened by urbanization also tend to face threats from recreation, roads and other human impacts (McKinney 2002).

It has been outlined and explored in the literature that the study of urban ecology can contribute to conservation by helping to develop a public view that is more ecologically informed. Education is a conflict mitigation approach that aims to modify human behaviour by reducing risk factors. This can be accomplished by increasing ecological knowledge surrounding conflict-causing or “nuisance” species and the most effective ways to reduce conflict (Dickman, 2010b). Using education and awareness, the goal is to reduce the prevalence of human-wildlife conflicts in urban areas and foster more positive relationships between people and the wild species we share our spaces with. Improving wildlife literacy can help to lessen hostility and reduce antagonism towards certain species, while liberating individuals to know how to appropriately respond when encountering wildlife. (Dickman, 2010a). This enables people to better protect themselves, their pets and wildlife species. Many people have irrational fears of relatively harmless species, which often stems from a lack of understanding and fosters a poor relationship dynamic. Further, it can foster adjustments to common behaviours such as allowing domestic cats to roam free which has grave impacts on wildlife that many are unaware of (Leong, 2009). Some scholars even speak of “the tragedy of becoming common” that occurs in urban ecosystems where wild animals are often categorized as pets or pests as opposed to being seen as wildlife (Leong, 2009).

Humans entered ecosystems made up of organisms that had co-evolved over long periods of time. These ecosystems are highly stable and resilient to environmental and climatic factors. However, humans modify these communities to achieve certain goals. Habitat alteration, predator control and disease alter the stability of ecosystems. Achieving and maintaining balance between human uses and the ecosystems on which we depend is what their sustainability relies on (Messmer, 2000). Sentiments expressed in this major research project are in line with the book *People and Wildlife, Conflict or Coexistence?* This book describes how wildlife are subject to forms of control when they are perceived as harmful to humans, or as pests. Undoubtedly, many wildlife species can thrive despite lethal control which we can see in our everyday lives in a wide range of invertebrate species along with vertebrates such as mice, rats, coyotes and squirrels (Woodroffe, Thirgood, & Rabinowitz, 2005). However, not all species are adapted enough to resist lethal control, and some can become seriously endangered as a result. In this way, the conflict is not only perceived from an anthropomorphic view but is created as there are tangible effects to both parties. This is a conflict, or challenge, of how we should approach situations where we are dealing with animals that could become endangered, that are causing damage to humans or their livelihoods. This is the conflict that needs resolving. The *solution* is co-existence. The question is, how do we get there. Therefore, I will continue to use the term “human-wildlife conflict” for the duration of this project. I believe that there still is a conflict, or a perceived one at the very least. Human-wildlife coexistence is the goal of educational tools, to better equip humans with how to mitigate situations of conflict and prepare them to *interpret* these situations differently. With greater understanding of natural history and mitigation solutions, conflicts can be diminished, and only then can we move towards coexistence. In choosing to not shift terminology, I am acknowledging that coexistence is the end goal, however I don’t think that we are there yet, nor do I believe that many people would describe urban interactions with wildlife as co-existence. In creating educational tools, the goal is to aid in shifting perspectives towards a future where human-wildlife coexistence is the popular view. Although conflict is popularly defined as two parties consciously antagonising one another, human livelihoods and values conflict with the livelihood of many wild species, especially in urban areas where they may live in closer proximity than rural settings (Peterson, Birckhead, Leong, Peterson, & Peterson, 2010).

Over time, urban development in the GTA has displaced many wild animals from natural habitats and as a result many species including raccoons, squirrels, geese, deer and coyotes have adapted to living closer to people. Wild animals have become a part of Toronto's landscape. This has greatly increased the frequency of interactions between humans and wildlife. These interactions are viewed by the City of Toronto (2015) as having an adverse impact on public health, safety and private property. In the city of Toronto, the most frequent complaint with the greatest impact to the public are instances of property damage as well as disruption to garbage bins and compost, which can result in financial impacts for homeowners as they seek to displace the wildlife and repair damage (City of Toronto, 2015). Residents also raise safety concerns about proximity to coyotes in residential areas even though coyotes are rarely a threat to people, as only 2.4 people annually are scratched or bitten by coyotes in Canada compared to over 460,000 dog bites (CHIRPP, 2012). For transmission of zoonotic diseases such as rabies to occur there must be direct contact between host animals and humans (Lindahl & Grace, 2015). However, rabies accounts for a relatively small amount of transmitted zoonotic disease, compared to the food-borne transmission that can result from animal product production. People tend to overestimate the risk of wildlife as vectors of zoonotic diseases and underestimate the risk of livestock as vectors of disease (Lindahl & Grace, 2015).

Although interactions between humans and wildlife are inevitable in urban spaces there are human behaviours that act as attractants and increase the risk for conflict such as intended or unintended feeding of wildlife (Don Carlos, Bright, Teel, & Vaske, 2009). Anthropogenic attractants include intentional bird feeding stations, as well as overflowing or carelessly stored garbage, as well as properties that are not maintained or areas that can be used as refugia such as decks, attics, and wood piles (Matlow, 2013).

It has been estimated that free-ranging domestic cats kill up to 4 billion birds and 22 billion mammals annually in the United States and have been identified as potentially being the single greatest source of anthropogenic mortality for birds and mammals in the US (Loss, Will, and Marra 2013). Domestic cats differ drastically from native predators. Predators in nature tend to be rare with respect to prey populations and naturally decline when a prey base declines, which is not true with domestic cats which are maintained far above natural carrying capacity. Unlike native predators such as raccoons or skunks, domestic cats typically kill prey regardless

of whether they intend on consuming it or not (Dauphine and Cooper 2009). Further, predators such as raccoons and skunks are nocturnal and therefore most active at night, while domestic cats are active throughout the day. Domestic cats are also less likely to hide from human beings and may hunt in the open in human-dominated areas. Not only does this behaviour directly impact prey populations, it depletes prey base for species such as raptors. Beckerman et al. (2007) showed that sub-lethal effects of domestic cats on prey populations such as altering foraging behaviour, breeding patterns and habitat use is substantial for urban songbirds and leading to population-level declines.

Residents of apartment buildings in Toronto have noted an increase in ducks and geese nesting on rooftop gardens in downtown Toronto, kilometres from the nearest water source (Clarke 2015). Wildlife centre officials have also stated that the incidents of ducks and geese nesting in unsafe urban locations are increasing. Ducks and geese typically nest in green spaces that are close to water, but when this happens to be a green roof on a high-rise building in downtown Toronto, there is no way for them to safely get to water. Although the intentions of Toronto's 2009 green roof bylaw were to have a greener city with greater biodiversity, there is little research done into how they can negatively impact native species. Green roofs are meant to reduce stormwater runoff, energy consumption, ambient temperature and cooling costs whilst making cities greener and creating potential for food production. A study in 2010 noted that little research has been done to understand the potential for providing nesting locations, specifically for normally ground-nesting species. It was noted that mallards breed on green roofs (Fernandez-Canero and Gonzalez-Redondo 2010). Animals with active habitat selection, such as geese and ducks, must reach an equilibrium between source and sink habitats. Sink habitats can be described as low-quality habitats where local reproductive success fails to keep pace with mortality rates (Pulliam, 1988). Source-sink dynamics contribute heavily to population dynamics. There can be both existence and persistence of maladaptive habitat selection of ecological sinks that can negatively impact populations (Dias, 1996). Ecological traps or sinks occur when animals choose to settle in poor-quality habitats that will lead to a reduction in survival (Gilroy & Sutherland, 2007). Failure of a species to recognize and utilize higher quality habitat sites can negatively influence populations (Gilroy & Sutherland, 2007). Goslings and ducklings are precocial, meaning they can eat, drink and walk on their own when they hatch. However, they cannot fly. When ducks and geese choose to nest in courtyards or on green roofs,



upon hatching the young have no way to get to a viable water source and will quickly dehydrate and perish. Little research has gone into how bylaws requiring vegetated areas on building rooftops can heavily increase bird-on-roof problems (Clarke 2015).

It is clear from exploring the literature that there are instances of human-wildlife conflict in urban areas that are well documented and acknowledged, as well as emerging issues that have yet to be fully confronted or understood. A common factor amongst these issues is a lack of ecological understanding by the public which can contribute to or exacerbate anthropogenic threats on wildlife as well as human perceptions of the threat wildlife poses to them. Although these conflicts can not necessarily be eliminated, they can potentially be mitigated through increased awareness and education. With education, a lot of harm to wildlife, people and their properties can be avoided, and we can create a safer city for humans and wildlife alike.

Based on the literature surrounding the term “human-wildlife conflict”, we could shift to referring to these instances as human-wildlife interactions. However, I want to be clear that the discourse of this project is viewing “conflicts” from the animal perspective. It is unclear whether, *before education*, that humans can accurately be framed as a knowing antagonist to wildlife. However, one can also take the standpoint that when humans, for example, introduce domestic cats into outdoor ecosystems to which they do not belong, they are creating a conflicting situation, in which our *values* as humans’ conflict with the fundamentals of the ecosystems to which we contribute. The main point, from this perspective, is that a lack of education about the consequences or ramifications of such actions makes them far more likely to happen. Because humans do have consciousness and hold values, if we are aware of the consequences that our actions can have on wildlife and *then* still choose to act in that manner, we are in a way being antagonists. However, if the actions come from a place of ignorance, then environmental and wildlife education can aid in shifting perspectives. When given the opportunity, residents express appreciation of the presence of native wildlife in their community, which emphasizes the importance of incorporating human values into the management of urban biodiversity (FitzGibbon & Jones, 2006). This points to the fact that wildlife management should shift from maximizing wildlife habitat and population to optimizing wildlife values for society (Messmer, 2000). Education aims to build capacity for conflict resolution and increase public understanding of human-wildlife conflict and the consequences for both humans and wildlife (Mardaraj & Sethy, 2015). Increased public awareness and appreciation for the ecology and nature of human-

wildlife conflict can give insights towards potential solutions, as the reason for conflict can be determined with basic appreciation and understanding of biological and ecological relationships (Messmer, 2000).

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## 2. Purpose and Objectives

The purpose of this Major Research Project was to provide education to school-age children and youth and to the general public about wildlife in urban ecosystems and ways to mitigate instances of human-wildlife conflict. From April- October of 2018 I completed experiential learning at Toronto Wildlife Centre where I worked as a Wildlife Emergency Hotline Operator. Toronto Wildlife Centre's mission is to promote a peaceful coexistence between people and wildlife, which mirrors my research interests and objectives. The centre is the only wildlife rehabilitation centre in the Greater Toronto Area and the largest wildlife hospital in all of Canada. My research interest and plan of study focuses on understanding human-wildlife conflict through the lens of biological conservation and wildlife management. In the past I have explored instances of human-wildlife conflict in other countries, such as the conflict between humans and elephants in Southeast Asia. By becoming employed at Toronto Wildlife Centre I hoped to gain insight into wildlife conflict in urban ecosystems and how we may move towards coexistence.

During my time as a hotline operator I interacted with callers on a daily basis who were confronted with sick, injured or orphaned wildlife, or wildlife that they viewed as nuisance species. It was shocking how little ecological knowledge the general public tends to have about the species that they share common spaces with. Further, it seemed that a lack of ecological knowledge was a driving force of the conflicts occurring. As a hotline operator, every day is spent educating individuals about urban ecology. Often, people lacking ecological knowledge draw inappropriate conclusions about wildlife and their behaviour. People often mistake fledgling songbirds as injured, adult birds. This conclusion is drawn from the fact that they are found on the ground and cannot fly, so assumptions are made where there is a gap in ecological knowledge. The young of prey species such as eastern cottontails or white-tailed deer spend a great deal of time alone, without a mother present. However, people who find young animals alone sometimes "kidnap" them, because they believe they should not be alone and therefore require assistance. Actually, a lot of harm is done to wildlife by people who care for them and want to help, but lack understanding of the species and their life history traits. This underlines that city dwellers do have an appreciation for wildlife, but a lack of accurate information to address situations appropriately. By fostering that care and providing resources for how

individuals may aid wildlife, we can move towards more peaceful interactions that can benefit both humans and non-human species.

The spring and summer are particularly busy for the wildlife hotline as it is mating season for wild animals. During this time resources become stretched really thin. Wildlife rehabilitation centres are charities. Without formal funding, limited resources are always an issue but particularly during this time. Due to the intensive care that young animals need when they have been separated from their wild parents, there are limits placed on how many the centre is able to admit. The limits are based on both caging space and man-power available to give the high quality of care necessary to rehabilitate and successfully release patients back to the wild. While the rehabilitation staff works around the clock most days during these months, the hotline is fielding up to 200 calls a day. Again, there may only be 2-3 staff members that are addressing each of these calls. A triage system is used to prioritize calls that should be answered immediately versus calls that can wait. Because the volume of emergency calls is so high during this time, resources are devoted to answering the calls about animals that the centre is able to take in. When people call Toronto Wildlife Centre, they are directed to a messaging system recording that explains which animals they are able to accept and from where. It specifies that calls not meeting those criteria, will not be returned during this busy time. Calls that are often not returned include those about nestling or fledgling songbirds, which the centre is never able to admit, and about rabies vector species such as squirrels and raccoons that reside outside of Toronto. Most days the staff does not have the capacity to answer all of these calls to direct them to other centres or provide any sort of education. This leaves many callers in situations with wildlife that they do not understand and will be equally as ill equipped to handle such a situation in the future.

By developing Bounce Back Fact Sheets the hope was that no one contacting the hotline will receive no response or no education. By collaborating with the Education and Outreach manager I was able to make a list of the situations that occur the most often and that during busy season, at least for periods of time, we are unable to return calls about. These situations included dealing with orphaned baby raccoons both from inside and outside Toronto limits, orphaned baby eastern grey squirrels both from inside and outside Toronto limits, orphaned baby eastern cottontails from both inside and outside Toronto limits, baby pigeons, baby pigeons on balconies

as a nuisance, nesting animals and baby songbirds. By implementing this system, every caller will receive information on how to assess the situation, determine whether the animal needs help and be given other options for where they can find help for that animal. Implementing this system will be particularly helpful for a charitable organization as it will greatly increase the number of people that are able to be reached without increasing staff.

The Education and Outreach manager oversees the hotline as well as both onsite and offsite educational presentations. There is a need for updated presentations that are engaging and informational, particularly for high school students. The purpose of these presentations is to provide high school students with a base level understanding of urban ecology, biological conservation and wildlife management. By creating a baseline understanding and exploring how these topics impact their local community, the objective is to foster both positive attitudes about wildlife and a willingness to aid instances of human-wildlife conflict in appropriate ways. Because curriculum requirements are stringent, it was important to focus on how wildlife education can fit into the curricula for different grade levels and subjects. By exploring Ontario curricula, I was able to first identify areas that wildlife education could fit in, and subsequently the best topics to focus on for given grade levels and courses. To encourage deep engagement, there is an emphasis placed on asset-based learning, community engagement and interactive activities. The presentations vary according to the topics explored in the curricula, with concepts becoming more complex for more senior grades.

To compliment both the Bounce Back Fact Sheets and the High School Presentations, I wanted to make fact sheets about common instances of human-wildlife conflict and how we can seek to mitigate those. The idea behind this would be to double down on the pre-emptive education provided in high school presentations but making this information available and accessible to all members of the public. In early 2019, I was given the opportunity by Wild Birds Unlimited to become employed as a Social Media Specialist for the nature shop. This role provided me a platform to use for wildlife and environmental education. By becoming a contributor to the Nature Notes Blog (<https://naturenotesblog.blogspot.com>) I was able to create bi-weekly educational blog posts about topics such as the conflict between wild birds and domestic cats, the intrinsic value of nature, avian life stages, avian-window collisions, turtles and road mortality, plastic pollution and wild animals and debunking wildlife myths. These blog

posts are available on the Nature Notes Blog but were also shared to Wild Birds Unlimited pages as well as my personal pages. This position has allowed me to reach more people with educational messaging about our interactions with wildlife. To compliment the blog posts, I also run their Instagram page (@wbubarrie) which serves as a platform to foster appreciation for wildlife and the environment while including educational information. I continuously use this platform to reach more people and engage with our following about local wildlife, which species are having young during which months, “did you know” facts and information about the life history traits of various animals. Social media is an important platform to be utilized for education about these topics and can aid in reaching a maximal number of individuals.

During the course of completing my graduate work, the City of Toronto released the Draft Biodiversity Strategy, which aims to increase the quality and quantity of natural habitat within the city, as well as increasing access to and awareness of nature in the city. Although the objectives of the draft strategy are admirable, after engaging with the strategy and attending public consultation it seemed there were a lot of issues that had not been addressed. The draft strategy fails to address the issues that may arise from inviting more wild animals into an urban ecosystem, or the many conflicts that already exist. Further, it lacked any information on how awareness of nature or ecological knowledge would be fostered. I wrote a letter addressing my concerns regarding the draft strategy and sent it to all City of Toronto members of parliament, as well as the city planners on board, and the consultation staff that hosted public meetings. It is important for politicians and planners to have a working knowledge of urban ecosystems and the challenges they face in order to make informed decisions regarding them.

This project represents the totality of efforts to create educational tools to mitigate human-wildlife conflict. The Bounce Back Fact Sheets are for those that have already found themselves in a conflicting situation. The Educational Blog Posts, presentations for high school students and letter regarding the draft biodiversity strategy all aim to provide pre-emptive education to mitigate future instances of human-wildlife conflict or provide resources for those that wish to learn more. By working closely with Toronto Wildlife Centre and Wild Birds Unlimited I was able to use the platforms of trustworthy organizations to distribute educational information about wildlife species in urban environments to the public.



### **3. Bounce Back Fact Sheets**

All calls that come into the TWC are transcribed into a database that lists the reason for the call (i.e; Trapped Animal, Foreign Object on Body, Attacked by Cat), along with various other pieces of information that allow operators to triage the calls and respond to the most urgent cases first. Toronto Wildlife Centre handles approximately 30,000 calls every year and during the busy season (spring/summer) staff handle as many as 200 calls per day. Responses to these calls result in approximately 5,000 sick, injured and orphaned wild patients being admitted annually from over 270 different species. This includes the TWC rescue team carrying out hundreds of complex and dangerous wildlife rescues that are too difficult for members of the public to attempt themselves (Toronto Wildlife Centre, 2018).

During the busy season, which can be defined as spring and summer months roughly stretching from May into October when animals are most active and breeding, TWC is unable to respond to the high volume of calls that come in. Therefore, the focus is placed on answering calls about animals that can be helped by the organization. Callers are asked to leave a voicemail when they call TWC and these messages are then transcribed into the database where hotline operators answer the calls in order of triage. Wildlife rehabilitators have a standard of care and place limits on how many animals of each species they can admit while still maintaining this standard of care considering factors such as caging space and staffing limitations. Unfortunately, during the busy season there are species that the organization is often at capacity for, such as baby squirrels, baby raccoons and baby pigeons. When capacity is reached the telephone greeting is changed to include which animals the organization can no longer admit and therefore cannot respond to the calls at all. This leaves a lot of people with sick, injured or orphaned wildlife that they have no idea how to help.

By developing “bounce back” fact sheets, when calls come in for species that the centre cannot admit, staff will have fact sheets that can be automatically sent back to the caller, providing information about how to tell if an animal is truly orphaned, how to potentially reunite it with its family or how to provide temporary care while figuring out how to get it to an appropriate organization. This effort will help to ensure that fewer people are left unable to deal with sick, injured or orphaned animals that they do not know how to help. Further, some of the

bounce back fact sheets address common nuisance situations. Again, nuisance calls cannot be prioritized during high call volume periods as the animals involved are healthy. However, it is important for people viewing wild animals as nuisances to be educated on their life history traits and be able to identify normal versus abnormal behaviour. The chart below provides more details on which calls specific bounce back fact sheets will address and the rationale behind why they are necessary.

#### References

Toronto Wildlife Centre. 2018. "Home - Toronto Wildlife Centre."  
<https://www.torontowildlifecentre.com/> (November 9, 2018).

	Inside Toronto	Outside of Toronto
Raccoons	Toronto Wildlife Centre does admit baby raccoons from inside of Toronto; however, they must be grouped geographically with other raccoons that are found within a 15km radius of one another. Due to the high volume of calls that we receive from inside Toronto, we only accept those that are from within city limits and likely to fit in existing geographical groups. This Bounce Back Fact Sheet will be sent to people who have found a baby raccoon inside the city of Toronto, during a time that the centre is full for baby raccoons and is unable to admit any more.	Toronto Wildlife Centre is NEVER able to admit baby raccoons from outside of Toronto, because they have to be grouped geographically with other raccoons that are found within a 15km radius of one another. This Bounce Back Sheet will be sent to people who have found a baby raccoon outside of the city of Toronto.

Squirrels	<p>Toronto Wildlife Centre does admit baby squirrels from inside of Toronto; however, they must be grouped geographically with other squirrels that are found within a 15km radius of one another. Due to the high volume of calls that we receive from inside Toronto, we only accept those that are from within city limits and likely to fit in existing geographical groups. This Bounce Back Fact Sheet will be sent to people who have found a baby squirrel inside the city of Toronto, during a time that the centre is full for baby squirrels and is unable to admit any more.</p>	<p>Toronto Wildlife Centre is NEVER able to admit baby squirrels from outside of Toronto, because they have to be grouped geographically with other squirrels that are found within a 15km radius of one another. This Bounce Back Sheet will be sent to people who have found a baby squirrel outside of the city of Toronto.</p>
Eastern Cottontails	<p>Toronto Wildlife Centre does admit baby eastern cottontails from inside the City of Toronto, however there is such a high call volume of baby eastern cottontails requiring care that it makes the most sense to limit to Toronto residents, as we can only care for 14 tube feeders at any given time. This Bounce Back Fact Sheet will be sent to people who have found a baby eastern cottontail inside the city of Toronto, during a time that the centre is full for baby cottontails and is unable to admit any more.</p>	<p>Toronto Wildlife Centre is NEVER able to admit baby eastern cottontails from outside of the City of Toronto, strictly due to the high volume of eastern cottontails requiring care inside the city and the limited amount of space available for them. This Bounce Back Sheet will be sent to people who have found a baby cottontail outside of the city of Toronto.</p>

Pigeons	<p>TWC does admit baby pigeons from inside the City of Toronto; however, there is such a high volume of baby pigeons requiring care that it makes the most sense to limit to Toronto residents, as we can only care for 10 tube feeders at any given time. This Bounce Back Fact Sheet will be sent to people who have found a baby pigeon inside the city of Toronto, during a time that the centre is full for baby pigeons and is unable to admit any more.</p>	
Baby Pigeons on Balconies	<p>Toronto Wildlife Centre receives a high volume of calls about baby pigeons on balconies, in the nest, with parents caring for them. These calls are considered “nuisance” inquiries and are not given priority during peak call volume times because they are not sick, injured or orphaned. However, the centre also receives a high volume of calls from people who have found “dumped” baby pigeons, which is often two young pigeons that have been removed from a balcony and placed in a box of some sort in a different area. It is important to preach tolerance and emphasize the value of all lives.</p>	

<p>Nesting Animals: Ducks and Geese</p>	<p>Toronto Wildlife Centre receives a high volume of calls about nesting geese and ducks during the spring and summer months. These calls tend to range from people who are concerned for the well-being of animals who have nested in “unsafe” locations to those that are framing the situation as a nuisance. Both Canada Goose and Duck eggs are federally protected and illegal to move, so there is nothing that can be done about this. However, providing education and preaching tolerance is important.</p>	<p>Rationale is the same for residents of the entire GTA</p>
<p>Song Birds</p>	<p>Toronto Wildlife Centre receives an extremely high volume of calls about baby songbirds during the spring and summer months. The centre is never able to take in nestling or fledgling songbirds due to a lack of resources and staffing to provide them with the intensive care that they require during this time in their lives. Because of the high volume of these calls and the need to focus on animals that can be helped, there is a need for further education. Often, people have called about a bird that is for example, a fledgling, and not an injured young bird as they first interpreted. Providing this education is important.</p>	<p>Rationale is the same for residents of the entire GTA</p>

### 3.1 Baby Orphaned Raccoons from Outside Toronto



#### How to Help Baby Orphaned Raccoons

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we're unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

**TORONTO WILDLIFE CENTRE CAN ONLY ADMIT BABY RACCOONS FROM WITHIN TORONTO**

TWC receives an extremely high number of requests for help for baby raccoons, and while we want to help them all, staff, space and other resources are limited; we must ensure we can provide the highest quality care. Since law requires baby raccoons to be grouped geographically within 1km of where they were found, accepting from a specific area allows us to take in the most baby raccoons according to our group and housing set up. Ultimately, this allows us to help as many baby raccoons as we can with the resources we have.





**IF YOU HAVE FOUND WHAT YOU BELIEVE TO BE A BABY ORPHANED RACCOON**, please follow these instructions:

Get the baby raccoon contained

Raccoons are a rabies vector species (RVS) in Ontario, so even young baby raccoons should not be handled directly without protection as they can still bite. Although rabies is rare, the serious consequences of potential exposure should be considered. For small, docile baby raccoons wear leather or Kevlar gloves and use a thick blanket or towel to place over the animal. Pick up the raccoon by firmly by circling one hand around the back of its neck and using the other hand to support the hind end and transfer the animal quickly to a prepared container.

To keep the baby raccoon safe while you figure out how to help it, put the raccoon in a small cardboard box with a soft towel or t-shirt. Even on a warm day babies can get cold, so give it a heat source:

A clean sock filled with dry, uncooked rice, and microwaved for one minute

A plastic bottle from the recycling bin filled with hot tap water

An electric heating pad set to "LOW" and placed under half of the box

Please do not give the raccoon food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs.

### How to Get Help for the Baby Raccoon

If the baby raccoon appears healthy and unharmed, it's mother may still be nearby. Please visit: <https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/raccoons/>

Under the heading "How did you find the raccoon?" you will find links to follow that will help you to assess whether it is likely that the baby raccoon is orphaned, and how to attempt reuniting it with its mother

If you determine that the baby raccoon is orphaned or injured and therefore needs to get to a wildlife rehabilitator please see a list of all rehabilitators in Ontario at: <https://www.ontario.ca/page/find-wildlife-rehabilitator>.

If getting the baby raccoon to a licensed wildlife rehabilitator is not an option for you, please contact your local animal control. (See list below)

If the raccoon is unable to get to a licensed rehabilitator to be cared for until it can be returned to the wild, the only options that remain are a life in captivity or humane euthanasia. Keeping wild animals in captivity creates a quality of life issue, where we must consider that wild animals need proper stimulation, correct diet, and minimal stress. Above everything else, we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed center, humane euthanasia is often the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

#### Animal Control Numbers (GTA)

Brampton Animal Services - 905-458-5800

Markham/ Richmond Hill: OSPCA – 1-888-668-7722 ext 319

Mississauga Animals Services– 905-896-5858

Oakville and Milton- Oakville Milton Humane Society – 905-845-1551

Toronto Animal Services – 311

Vaughan Animal Services- 1-855-227-7297





### 3.2 Baby Orphaned Raccoons for when the centre is full for residents of Toronto



## How to Help Baby Orphaned Raccoons

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we're unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

**WE ARE CURRENTLY FULL FOR BABY RACCOONS AND ARE CURRENTLY UNABLE TO ADMIT ANYMORE INTO OUR CARE**

TWC receives an extremely high number of requests for help for baby raccoons, and while we want to help them all, staff, space and other resources are limited; we must ensure we can provide the highest quality care.

#### **IF YOU HAVE FOUND WHAT YOU BELIEVE TO BE A BABY ORPHANED RACCOON,** please follow these instructions:

Get the baby raccoon contained

Raccoons are a rabies vector species (RVS) in Ontario, so even young baby raccoons should not be handled directly without protection as they can still bite. Although rabies is rare, the serious consequences of potential exposure should be considered. For small, docile baby raccoons wear leather or Kevlar gloves and use a thick blanket or towel to place over the animal. Pick up the raccoon by firmly by circling one hand around the back of its neck and using the other hand to support the hind end and transfer the animal quickly to a prepared container.

To keep the baby raccoon safe while you figure out how to help it, put the raccoon in a small cardboard box with a soft towel or t-shirt. Even on a warm day babies can get cold, so give it a heat source:

A clean sock filled with dry, uncooked rice, and microwaved for one minute

A plastic bottle from the recycling bin filled with hot tap water

An electric heating pad set to "LOW" and placed under half of the box  
Please do not give the raccoon food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs.





### How to Get Help for the Baby Raccoon

If the baby raccoon appears healthy and unharmed, it's mother may still be nearby. Please visit: <https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/raccoons/>

Under the heading "How did you find the raccoon?" you will find links to follow that will help you to assess whether it is likely that the baby raccoon is orphaned, and how to attempt reuniting it with its mother

If you determine that the baby raccoon is orphaned or injured and therefore needs to get to a wildlife rehabilitator please see a list of all rehabilitators in Ontario at:

<https://www.ontario.ca/page/find-wildlife-rehabilitator>.

If getting the baby raccoon to a licensed wildlife rehabilitator is not an option for you, please contact your local animal control. (See list below)

If the raccoon is unable to get to a licensed rehabilitator to be cared for until it can be returned to the wild, the only options that remain are a life in captivity or humane euthanasia. Keeping wild animals in captivity creates a quality of life issue, where we must consider that wild animals need proper stimulation, correct diet, and minimal stress. Above everything else, we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed center, humane euthanasia is often the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

Animal Control Numbers (GTA)

Brampton Animal Services - 905-458-5800

Markham/ Richmond Hill: OSPCA – 1-888-668-7722 ext 319

Mississauga Animals Services– 905-896-5858

Oakville and Milton- Oakville Milton Humane Society – 905-845-1551

Toronto Animal Services – 311

Vaughan Animal Services- 1-855-227-7297



### 3.3 Baby Eastern Grey Squirrels from outside of Toronto



## How to Help Baby Orphaned Squirrels

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we're unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

**TORONTO WILDLIFE CENTRE CAN ONLY ADMIT BABY ORPHANED SQUIRRELS FROM WITHIN TORONTO**

TWC receives an extremely high number of requests for help for baby squirrels, and while we want to help them all, staff, space and other resources are limited; we must ensure we can provide the highest quality care. Since law requires baby squirrels to be grouped geographically within 15km of where they were found, accepting from a specific area allows us to take in the most baby squirrels according to our group and housing set up. Ultimately, this allows us to help as many baby squirrels as we can with the resources we have.

### **Get the baby squirrel contained**

To keep the baby squirrel safe while you figure out how to help it, put the squirrel in a small cardboard box with a soft towel or t-shirt.

Even on a warm day babies can get cold, so give it a heat source:

A clean sock filled with dry, uncooked rice, and microwaved for one minute

A plastic bottle from the recycling bin filled with very warm tap water

An electric heating pad set to "LOW" and placed under half of the box

Please do not give the squirrel food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs. IF the baby squirrel has its eyes open you can offer small chunks of apple in the box with it that it may or may not choose to nibble on for some sugar/ water.







### How to Get Help for the Baby Squirrel

If the baby squirrel appears otherwise healthy and unharmed, it's mother may still be nearby. Please visit: <https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/baby-squirrels/found-on-the-ground/>

For instructions on how to reunite the baby with its mother

If the baby squirrel appears sick, injured, has bugs on it or is following people around, please do your best to get it to a wildlife rehabilitator. Signs that a baby squirrel needs help include:

The baby has been brought home by a cat or dog

The baby has bugs on its body, or there are a lot of flies around the baby

The baby is following people or pets, often clinging to peoples pants or shoes

Young babies who are not yet very mobile are falling out of an intact nest (orphaned babies not ready to leave nest will crawl out if they become hungry enough)

The baby has been observed consistently for several hours with no mother in sight and is not returning to a nest on its own

The baby appears sick or injured in any way

The baby has been under human care for 24 hours or more



### Finding a Wildlife Rehabilitator

Unfortunately, TWC is currently full for orphaned baby squirrels. To find an alternate wildlife rehabilitator, please refer to the Ministry of Natural Resources and Forestry list of licensed wildlife rehabilitators that may be able to care for the cottontail: <https://www.ontario.ca/page/find-wildlife-rehabilitator>.

or TWC's website at:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/baby-squirrels/squirrel-rehabilitator/>

There are few wildlife rehabilitators within a reasonable drive of the GTA. All wildlife rehabilitators fill up quickly with orphaned wildlife. If you cannot find a rehabilitator with available space to accept the orphaned squirrel, or if you are unable to transport it, please contact your municipal animal control. (See list below) Sadly, your municipal animal control can only provide humane euthanasia as they do not have the required training or permits to provide rehabilitation. While opting for euthanasia is not a choice anyone wants to make, there are simply not enough rehabilitators to meet the high demand and orphaned wildlife suffer without proper care.

We must consider that wild animals need proper stimulation, correct diet and minimal stress. Above everything else we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed centre, humane euthanasia is the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

### Animal Control Numbers (GTA)

Brampton Animal Services - 905-458-5800

Markham/ Richmond Hill: OSPCA - 1-888-668-7722 ext 319

Mississauga Animals Services- 905-896-5858

Oakville and Milton- Oakville Milton Humane Society - 905-845-1551

Toronto Animal Services - 311

Vaughan Animal Services- 1-855-227-7297



### 3.4 Baby Eastern Grey Squirrels for when the centre is full for residents of Toronto



## How to Help Baby Orphaned Squirrels

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we’re unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

**WE ARE CURRENTLY FULL FOR BABY EASTERN GREY SQUIRRELS AND ARE NOT ABLE TO ADMIT ANYMORE INTO OUR CENTRE**  
TWC receives an extremely high number of requests for help for baby squirrels, and while we want to help them all, staff, space and other resources are limited; we must ensure we can provide the highest quality care.

#### Get the baby squirrel contained

To keep the baby squirrel safe while you figure out how to help it, put the squirrel in a small cardboard box with a soft towel or t-shirt.

Even on a warm day babies can get cold, so give it a heat source:

A clean sock filled with dry, uncooked rice, and microwaved for one minute

A plastic bottle from the recycling bin filled with very warm tap water

An electric heating pad set to “LOW” and placed under half of the box

Please do not give the squirrel food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs. IF the baby squirrel has its eyes open you can offer small chunks of apple in the box with it that it may or may not choose to nibble on for some sugar/ water.







### How to Get Help for the Baby Squirrel

If the baby squirrel appears otherwise healthy and unharmed, it's mother may still be nearby. Please visit: <https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/baby-squirrels/found-on-the-ground/>  
For instructions on how to reunite the baby with its mother

If the baby squirrel appears sick, injured, has bugs on it or is following people around, please do your best to get it to a wildlife rehabilitator. Signs that a baby squirrel needs help include:

The baby has been brought home by a cat or dog

The baby has bugs on its body, or there are a lot of flies around the baby

The baby is following people or pets, often clinging to peoples pants or shoes

Young babies who are not yet very mobile are falling out of an intact nest (orphaned babies not ready to leave nest will crawl out if they become hungry enough)

The baby has been observed consistently for several hours with no mother in sight and is not returning to a nest on its own

The baby appears sick or injured in any way

The baby has been under human care for 24 hours or more



### Finding a Wildlife Rehabilitator

Unfortunately, TWC is currently full for orphaned baby squirrels. To find an alternate wildlife rehabilitator, please refer to the Ministry of Natural Resources and Forestry list of licensed wildlife rehabilitators that may be able to care for the cottontail: <https://www.ontario.ca/page/find-wildlife-rehabilitator>.

or TWC's website at:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/baby-squirrels/squirrel-rehabilitator/>

There are few wildlife rehabilitators within a reasonable drive of the GTA. All wildlife rehabilitators fill up quickly with orphaned wildlife. If you cannot find a rehabilitator with available space to accept the orphaned squirrel, or if you are unable to transport it, please contact your municipal animal control. (See list below) Sadly, your municipal animal control can only provide humane euthanasia as they do not have the required training or permits to provide rehabilitation. While opting for euthanasia is not a choice anyone wants to make, there are simply not enough rehabilitators to meet the high demand and orphaned wildlife suffer without proper care.

We must consider that wild animals need proper stimulation, correct diet and minimal stress. Above everything else we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed centre, humane euthanasia is the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

#### Animal Control Numbers (GTA)

Brampton Animal Services - 905-458-5800

Markham/ Richmond Hill: OSPCA – 1-888-668-7722 ext 319

Mississauga Animals Services– 905-896-5858

Oakville and Milton- Oakville Milton Humane Society – 905-845-1551

Toronto Animal Services – 311

Vaughan Animal Services- 1-855-227-7297



### 3.5 Baby Eastern Cottontails for outside of Toronto



## How to Help Baby Orphaned Eastern Cottontails

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we’re unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

**TORONTO WILDLIFE CENTRE CAN ONLY ADMIT BABY ORPHANED COTTONTAILS FROM WITHIN TORONTO**

TWC receives an extremely high number of requests for help for baby cottontails, and while we want to help them all, staff, space and other resources are limited; we must ensure we can provide the highest quality care. Since law requires baby cottontails to be grouped geographically within 15km of where they were found, accepting from a specific area allows us to take in the most baby cottontails according to our group and housing set up. Ultimately, this allows us to help as many baby cottontails as we can with the resources we have.

**The wild rabbits most commonly seen in southern Ontario are called “Eastern Cottontails”.**

Older baby cottontails are easy to identify – they look like mini adult rabbits. Newborn, naked baby rabbits can be distinguished from other babies by their dark skin and long ears. Often, they have a white dot on their forehead.

#### What’s Normal

I haven’t seen the mother around

Mother rabbits don’t want to attract predators to their babies, so they mostly leave them on their own, hidden and camouflaged. Mom will come back a few times a day, usually between dusk and dawn, to feed the babies. Feeding may only take 2-3 minutes, so unless you’re watching 24/7 you will probably miss it!

#### If the nest has been disturbed

Recreate the nest as best you can, in the exact same spot it was originally in. Use any remaining nesting material. If you need extra you can use some dried grass. Tuck the babies back in the nest and make sure they are covered up with nesting material.





**The string test**

If you're really concerned that the babies might be orphaned, you can do what we call the "string test". Take a few pieces of yarn or light cotton string, and place them over the nest in a tic-tac-toe pattern. It can help to take a photo of this, so you can compare it later. Leave the string overnight, and check in the morning. Was the string moved? That's great – it means mom came back overnight and fed the babies.

**Leave the nest alone**

If you've done a string test and you know the mother rabbit is coming back to feed the babies, leave the nest alone. Cottontail rabbits do very poorly in captivity – their best bet at survival is with their mom.

The good news is that cottontail rabbits grow up really quickly! They start leaving the nest as early as 3 weeks old, and soon disperse from their mother's territory.

**Can I move the nest to a better spot?**

No. Rabbits are very specific about the location of their nest. Moving it even a foot or two away will cause the mother to abandon it. Mother rabbits are also one of the only mammals who cannot pick their babies up to move them to a better spot. Are any of the baby rabbits injured?

A baby rabbit with any of the following signs is injured and needs medical attention:

There are obvious wounds or blood on its body

It has had contact with a cat – even with no obvious injuries, this is a medical emergency for baby rabbits

It is lying on its side and cannot right itself

Put the injured baby rabbit(s) in a cardboard box in a dark, quiet place. Put a heat source like a rice sock or warm water bottle in the box with them. Contact a wildlife rehabilitator right away.

Please do not give the rabbit food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs.

**Finding a Wildlife Rehabilitator**

Unfortunately, TWC is unable to accept orphaned baby cottontails from outside of Toronto. To find an alternate wildlife rehabilitator, please refer to the Ministry of Natural Resources and Forestry list of licensed wildlife rehabilitators that may be able to care for the raccoon:

<https://www.ontario.ca/page/find-wildlife-rehabilitator>.

or TWC's website at:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/how-to-help-orphaned-baby-rabbits/temporary-care-baby-rabbits/>

There are few wildlife rehabilitators within a reasonable drive of the GTA. All wildlife rehabilitators fill up quickly with orphaned wildlife. If you cannot find a rehabilitator with available space to accept the orphaned cottontail, or if you are unable to transport it, please contact your municipal animal control. (See list below)

Sadly, your municipal animal control can only provide humane euthanasia as they do not have the required training or permits to provide rehabilitation. While opting for euthanasia is not a choice anyone wants to make, there are simply not enough rehabilitators to meet the high demand and orphaned wildlife suffer without proper care.

We must consider that wild animals need proper stimulation, correct diet and minimal stress. Above everything else we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed centre, humane euthanasia is the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

**Animal Control Numbers (GTA)**

Brampton Animal Services - 905-458-5800

Markham/ Richmond Hill: OSPCA – 1-888-668-7722 ext 319

Mississauga Animals Services– 905-896-5858

Oakville and Milton- Oakville Milton Humane Society – 905-845-1551

Toronto Animal Services – 311

Vaughan Animal Services- 1-855-227-7297



### 3.6 Baby Eastern Cottontails for when the centre is full for residents of Toronto



## How to Help Baby Orphaned Eastern Cottontails

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we’re unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

WE ARE CURRENTLY FULL FOR BABY EASTERN COTTONTAILS AND ARE CURRENTLY UNABLE TO ADMIT ANYMORE INTO OUR CARE  
TWC receives an extremely high number of requests for help for baby cottontails, and while we want to help them all, staff, space and other resources are limited; we must ensure we can provide the highest quality care.

**The wild rabbits most commonly seen in southern Ontario are called “Eastern Cottontails”.**

Older baby cottontails are easy to identify – they look like mini adult rabbits. Newborn, naked baby rabbits can be distinguished from other babies by their dark skin and long ears. Often, they have a white dot on their forehead.

#### What’s Normal

I haven’t seen the mother around

Mother rabbits don’t want to attract predators to their babies, so they mostly leave them on their own, hidden and camouflaged. Mom will come back a few times a day, usually between dusk and dawn, to feed the babies. Feeding may only take 2-3 minutes, so unless you’re watching 24/7 you will probably miss it!

#### If the nest has been disturbed

Recreate the nest as best you can, in the exact same spot it was originally in. Use any remaining nesting material. If you need extra you can use some dried grass. Tuck the babies back in the nest and make sure they are covered up with nesting material.





**The string test**

If you're really concerned that the babies might be orphaned, you can do what we call the "string test". Take a few pieces of yarn or light cotton string, and place them over the nest in a tic-tac-toe pattern. It can help to take a photo of this, so you can compare it later. Leave the string overnight, and check in the morning. Was the string moved? That's great – it means mom came back overnight and fed the babies.

**Leave the nest alone**

If you've done a string test and you know the mother rabbit is coming back to feed the babies, leave the nest alone. Cottontail rabbits do very poorly in captivity – their best bet at survival is with their mom.

The good news is that cottontail rabbits grow up really quickly! They start leaving the nest as early as 3 weeks old, and soon disperse from their mother's territory.

**Can I move the nest to a better spot?**

No. Rabbits are very specific about the location of their nest. Moving it even a foot or two away will cause the mother to abandon it. Mother rabbits are also one of the only mammals who cannot pick their babies up to move them to a better spot. Are any of the baby rabbits injured?

A baby rabbit with any of the following signs is injured and needs medical attention:

There are obvious wounds or blood on its body

It has had contact with a cat – even with no obvious injuries, this is a medical emergency for baby rabbits

It is lying on its side and cannot right itself

Put the injured baby rabbit(s) in a cardboard box in a dark, quiet place. Put a heat source like a rice sock or warm water bottle in the box with them. Contact a wildlife rehabilitator right away.

Please do not give the rabbit food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs.

**Finding a Wildlife Rehabilitator**

Unfortunately, TWC is unable to accept orphaned baby cottontails from outside of Toronto. To find an alternate wildlife rehabilitator, please refer to the Ministry of Natural Resources and Forestry list of licensed wildlife rehabilitators that may be able to care for the raccoon:

<https://www.ontario.ca/page/find-wildlife-rehabilitator>.

or TWC's website at:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/how-to-help-orphaned-baby-rabbits/temporary-care-baby-rabbits/>

There are few wildlife rehabilitators within a reasonable drive of the GTA. All wildlife rehabilitators fill up quickly with orphaned wildlife. If you cannot find a rehabilitator with available space to accept the orphaned cottontail, or if you are unable to transport it, please contact your municipal animal control. (See list below)

Sadly, your municipal animal control can only provide humane euthanasia as they do not have the required training or permits to provide rehabilitation. While opting for euthanasia is not a choice anyone wants to make, there are simply not enough rehabilitators to meet the high demand and orphaned wildlife suffer without proper care.

We must consider that wild animals need proper stimulation, correct diet and minimal stress. Above everything else we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed centre, humane euthanasia is the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

**Animal Control Numbers (GTA)**

Brampton Animal Services - 905-458-5800

Markham/ Richmond Hill: OSPCA – 1-888-668-7722 ext 319

Mississauga Animals Services– 905-896-5858

Oakville and Milton- Oakville Milton Humane Society – 905-845-1551

Toronto Animal Services – 311

Vaughan Animal Services- 1-855-227-7297





### 3.7 Baby Pigeons for when we are full for residents of Toronto



## How to Help Baby Orphaned Pigeons

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we're unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

**WE ARE CURRENTLY FULL FOR BABY PIGEONS AND ARE CURRENTLY UNABLE TO ADMIT ANYMORE INTO OUR CARE**

Baby pigeons are very unusual-looking birds that often get mistaken for other babies. Please reference these photos to help you in identifying a baby pigeon:

**IF YOU HAVE FOUND WHAT YOU BELIEVE TO BE A BABY ORPHANED PIGEON, please follow these instructions:**

Get the baby pigeon contained

To keep the baby squirrel safe while you figure out how to help it, put the squirrel in a small cardboard box with a soft towel or t-shirt. Even on a warm day babies can get cold, so give it a heat source:

A clean sock filled with dry, uncooked rice, and microwaved for one minute

A plastic bottle from the recycling bin filled with hot tap water

An electric heating pad set to "LOW" and placed under half of the box

Please do not give the pigeon food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs.

Sometimes you can tell whether the baby is a pigeon because you have seen its parents nearby. For help determining whether a baby pigeon is orphaned, please visit our website page:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/how-to-help-baby-birds/baby-pigeon-or-dove/>





If the baby pigeon appears healthy and unharmed, it's mother may still be nearby. If you are sure the baby is a pigeon, and you know exactly where the nest is or was and can put it back, do that. If the pigeons are nesting on your balcony and you want to prevent them from doing so in the future, put the baby back on the balcony for now and check out our page on nuisance pigeon situations:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/conflicts-with-wildlife/>



### Signs That a Baby Pigeon Needs Help

If the baby pigeon has any of the following signs it is injured and needs help:

There are obvious wounds or blood on its body

It has had contact with a cat – even with no obvious injuries, this is a medical emergency for baby birds

The bird is lying on its side and cannot right itself

It is covered in bugs or insects

The bird feels cold to the touch when you pick it up

If the baby pigeon is found in an area in which you believe it to have been “dumped”, taken from its original nesting location and placed in the area in which you found it, it is likely orphaned.

The best way to test if a baby is still being fed by parents is a poop test which consists of:

place the baby pigeon in a cardboard box (can be open), with white paper towel at the bottom

wait an hour to 2 hours and see if there is new poop on the paper towel that looks like normal bird poop (black solid piece surrounded by white liquid)

baby birds have very quick metabolisms and frequent, normal poops indicate that the bird is being fed by a parent



### Finding a Wildlife Rehabilitator

Unfortunately, TWC is currently full for orphaned baby pigeons. To find an alternate wildlife rehabilitator, please refer to the Ministry of Natural Resources and Forestry list of licensed wildlife rehabilitators to find other centres that may be able to care for the pigeon: <https://www.ontario.ca/page/find-wildlife-rehabilitator> or our website at:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/how-to-help-baby-birds/pigeon-or-dove-rehabber/>

If getting the pigeon to a licensed wildlife rehabilitator is not an option for you, please contact your local animal control. (See list below)

There are few wildlife rehabilitators within a reasonable drive of the GTA. All wildlife rehabilitators fill up quickly with orphaned wildlife. If you cannot find a rehabilitator with available space to accept the orphaned pigeon, or if you are unable to transport it, please contact your municipal animal control. (See list below)

Sadly, your municipal animal control can only provide humane euthanasia as they do not have the required training or permits to provide rehabilitation. While opting for euthanasia is not a choice anyone wants to make, there are simply not enough rehabilitators to meet the high demand and orphaned wildlife suffer without proper care.

We must consider that wild animals need proper stimulation, correct diet and minimal stress. Above everything else we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed centre, humane euthanasia is the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

Animal Control Numbers (GTA)

Brampton Animal Services - 905-458-5800

Markham/ Richmond Hill: OSPCA – 1-888-668-7722 ext 319

Mississauga Animals Services – 905-896-5858

Oakville and Milton- Oakville Milton Humane Society – 905-845-1551

Toronto Animal Services – 311

Vaughan Animal Services- 1-855-227-7297





### 3.8 Addressing pigeons on balconies as a nuisance situation



## Baby Pigeons on Balconies

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we’re unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

Pigeons have been living alongside humans for thousands of years and have adapted their lifestyle to urban living very successfully. In their natural habitat, they would nest on the sides of tall rocky cliffs. Balconies and ledges on apartment buildings are very similar, so pigeons often choose to nest in these familiar places

#### Be Patient

If the babies have already hatched, really the only thing you can do is wait for them to grow up and fly away. Don’t worry – baby pigeons grow up very quickly! The time between when they hatch from the egg to when they fly away from their nest is usually less than 4 weeks. Once they leave, the babies don’t come back to the nest again.

Please don’t move the nest

Pigeons are very location-specific when it comes to their nest site. Moving the nest over even a few feet – say to a neighbouring balcony – can cause the parents to abandon the nest.

Baby pigeons **NEED** their parents – they cannot survive without them. Their parents feed them, keep them warm, and even after they’ve left the nest mom and dad show them how to fly, escape from predators, and integrate with the flock.

If you take the babies off of your balcony and move them, even if it’s to a “nice” spot like the local park, they will die. The best thing to do is to let the parents raise this one set of babies. It will take less than a month, they grow up so fast. Once the babies have flown away, you can prevent the pigeons from nesting again in the future.

Visit our website for information on how to stop nesting from happening in the future:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/conflicts-with-wildlife/common-pigeon-problems/pigeons-nesting-on-balcony/>





**IF YOU HAVE FOUND WHAT YOU BELIEVE TO BE A BABY ORPHANED PIGEON, please follow these instructions:**

Get the baby pigeon contained

To keep the baby pigeon safe while you figure out how to help it, put the pigeon in a small cardboard box with a soft towel or t-shirt. Even on a warm day babies can get cold, so give it a heat source:

A clean sock filled with dry, uncooked rice, and microwaved for one minute

A plastic bottle from the recycling bin filled with hot tap water

An electric heating pad set to "LOW" and placed under half of the box

Please do not give the pigeon food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs.

Sometimes you can tell whether the baby is a pigeon because you have seen its parents nearby. For help determining whether a baby pigeon is orphaned, please visit our website page:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/how-to-help-baby-birds/baby-pigeon-or-dove/>

If the baby pigeon appears healthy and unharmed, it's mother may still be nearby. If you are sure the baby is a pigeon, and you know exactly where the nest is or was and can put it back, do that. If the pigeons are nesting on your balcony and you want to prevent them from doing so in the future, put the baby back on the balcony for now and check out our page on nuisance pigeon situations:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/conflicts-with-wildlife/>

### Signs That a Baby Pigeon Needs Help

If the baby pigeon has any of the following signs it is injured and needs help:

There are obvious wounds or blood on its body

It has had contact with a cat – even with no obvious injuries, this is a medical emergency for baby birds

The bird is lying on its side and cannot right itself

It is covered in bugs or insects

The bird feels cold to the touch when you pick it up

If the baby pigeon is found in an area in which you believe it to have been "dumped", taken from its original nesting location and placed in the area in which you found it, it is likely orphaned.

The best way to test if a baby is still being fed by parents is a poop test which consists of:

place the baby pigeon in a cardboard box (can be open), with white paper towel at the bottom wait an hour to 2 hours and see if there is new poop on the paper towel that looks like normal bird poop (black solid piece surrounded by white liquid)

baby birds have very quick metabolisms and frequent, normal poops indicate that the bird is being fed by a parent

### Finding a Wildlife Rehabilitator

Unfortunately, TWC is currently full for orphaned baby pigeons. To find an alternate wildlife rehabilitator, please refer to the Ministry of Natural Resources and Forestry list of licensed wildlife rehabilitators to find other centres that may be able to care for the pigeon:

<https://www.ontario.ca/page/find-wildlife-rehabilitator>.

or our website at:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/how-to-help-baby-birds/pigeon-or-dove-rehabber/>

If getting the pigeon to a licensed wildlife rehabilitator is not an option for you, please contact your local animal control. (See list below)

There are few wildlife rehabilitators within a reasonable drive of the GTA. All wildlife rehabilitators fill up quickly with orphaned wildlife. If you cannot find a rehabilitator with available space to accept the orphaned pigeon, or if you are unable to transport it, please contact your municipal animal control. (See list below)

Sadly, your municipal animal control can only provide humane euthanasia as they do not have the required training or permits to provide rehabilitation. While opting for euthanasia is not a choice anyone wants to make, there are simply not enough rehabilitators to meet the high demand and orphaned wildlife suffer without proper care.

We must consider that wild animals need proper stimulation, correct diet and minimal stress. Above everything else we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed centre, humane euthanasia is the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

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Toronto Animal Services – 311

Vaughan Animal Services- 1-855-227-7297





### 3.9 Nesting animals



## Nesting Animals - Ducks and Canada Geese

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we're unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

**It is important to know that a baby duckling or baby gosling found on its own should always be considered an orphan if their mom cannot be spotted nearby. If you have found what appears to be an orphaned baby duck or gosling please follow these instructions and re-contact us.**

#### Get the baby contained

To keep the baby safe while you figure out how to help it, put the duck or goose in a small cardboard box with a soft towel or t-shirt. Even on a warm day babies can get cold, so give it a heat source:

A clean sock filled with dry, uncooked rice, and microwaved for one minute

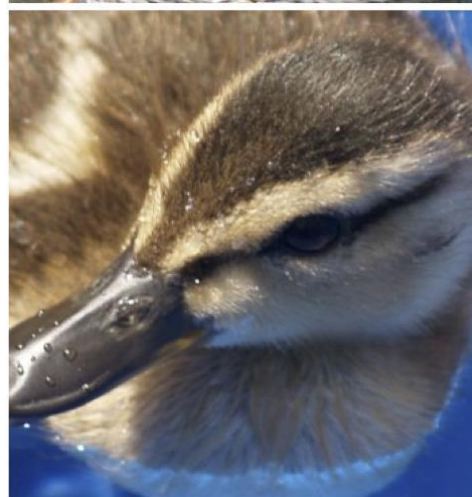
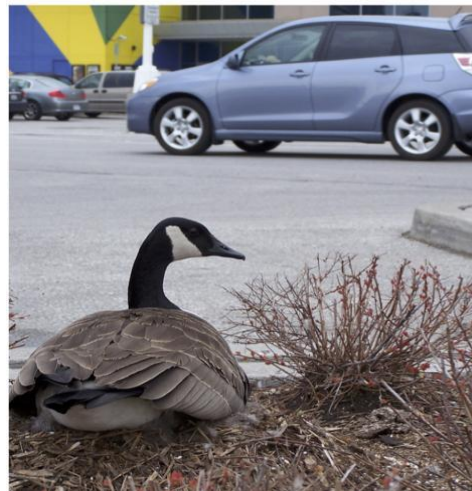
A plastic bottle from the recycling bin filled with hot tap water

An electric heating pad set to "LOW" and placed under half of the box

You may offer a shallow dish of water. Please do not provide anything else as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs.

PLEASE NOTE: baby ducks and geese imprint on human beings very easily and it is VERY important that they have limited contact with or sight of human beings. Please once contained leave them on their own

Mallard ducks are good at choosing nesting sites, even if sometimes these sites are hard for us to understand. Mallards like sheltered spaces with a lot of vegetation, where the female can stay safe and camouflaged while she incubates her eggs. Well-planted front or backyards look like great nesting spots to mallard ducks. If there are no barriers more than a foot high to prevent the baby ducks from leaving, it's probably a normal situation. Sometimes ducks don't think ahead, and nest in places that their babies won't be able to fly out or off of. If the nest area has a barrier around it more than a foot high, please contact a wildlife rehabilitator for advice. If the ducklings have already hatched, provide them with a shallow pan of water and consider this an emergency.



Please visit our website for help troubleshooting more common duck nesting situations: <https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/conflicts-with-wildlife/common-duck-problems/>  
To learn more about mallard ducks, their nesting behaviour, and their life history, check out [allaboutbirds.org](http://allaboutbirds.org).



### Canada Geese Nesting

Geese are good at choosing nesting sites, even if sometimes these sites are hard for us to understand. Canada geese like open, flat spaces where they can see predators coming from far away, so parking lots look like great nesting spots to Canada geese. If the nest is less than 2 storeys above the ground, and there are no barriers more than a foot high to prevent the babies from leaving, it's probably a normal situation. Nests containing eggs should be left alone. Moving them even a few feet risks orphaning the unhatched young, as the mother goose won't recognize her relocated nest. It is also against the law to interfere with a nest without a permit, as Canada geese are federally protected.

Sometimes geese don't think ahead, and nest in places that their babies won't be able to fly out or off of. If the nest is in a parking structure more than 2 storeys above ground, OR completely enclosed, OR has a barrier around it more than a foot high, please contact a wildlife rehabilitator for advice. If the babies have already hatched, provide them with a shallow pan of water and consider this an emergency.

Please visit our website for help troubleshooting more common geese nesting situations: <https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/conflicts-with-wildlife/common-canada-geese-problems/>

The Humane Society of the United States (HSUS) website provides a lot of information about managing conflicts with geese, and has print materials available on resolving human-geese conflicts.





### 3.10 Baby songbirds (which the centre is never able to admit)



## How to Help Baby Orphaned Song Birds

Thank you for contacting Toronto Wildlife Centre (TWC) – a charity dedicated to providing expert medical treatment and rehabilitative care to sick, injured and orphaned wild animals. During the busy spring and summer seasons, our wildlife hotline receives thousands of requests for assistance regarding orphaned wildlife. Because we operate almost entirely on donations, we cannot meet the high demand for help due to limited space, staffing and resources. We apologize – we’re unable to call you back at this time as we are receiving more calls than we can respond to. To help the most animals possible, we must focus on answering calls about wildlife we currently have space for at our centre.

**TORONTO WILDLIFE CENTRE IS UNABLE TO ADMIT NESTLING SONGBIRDS**  
TWC receives an extremely high number of requests for help for baby songbirds, and while we want to help them all, staff, space and other resources are limited; we must ensure we can provide the highest quality care. Due to the high amount of attention baby songbirds need, we are unable to care for them appropriately.

**A nestling or hatchling songbird is a baby robin, sparrow, starling, finch, etc. These babies often have a fleshy white, pink, or yellow “lip” around the edge of their beaks. They may open their mouths wide and chirp to beg for food. Hatchlings are babies that don’t have any feathers yet. Their eyes are usually still closed, their skin is usually pink, and they may have a bit of fluffy white, grey, or dark down, especially on their heads.**

A nestling is a little bit older, but still too young to be out of the nest. Nestlings may have a few feathers but will still have some naked spots or “pin feathers” coming in on their bodies. They cannot stand, hop, or perch yet.

#### **Get the baby bird contained**

To keep the baby bird safe while you figure out how to help it, put the pigeon in a small cardboard box with a soft towel or t-shirt. Even on a warm day babies can get cold, so give it a heat source:

A clean sock filled with dry, uncooked rice, and microwaved for one minute

A plastic bottle from the recycling bin filled with very warm tap water

An electric heating pad set to “LOW” and placed under half of the box  
Please do not give the bird food or water, as they have very specific dietary needs; improper feeding can cause diarrhea, bloating and aspiration in the lungs.

Signs that a baby bird needs help:

A baby bird with any of the following signs is injured and needs medical attention:

There are obvious wounds or blood on its body

It has had contact with a cat – even with no obvious injuries, this is a medical emergency for baby birds

The bird is lying on its side and cannot right itself

It is covered in bugs or insects

The bird feels cold to the touch when you pick it up





If you answered yes to any of these questions, the bird should be taken to a wildlife rehabilitator.

### Baby Birds Found on the Ground

Hatchlings and nestlings are too young to be out of the nest, so if you find them on the ground they've likely fallen or been removed. Getting them back into their original nest, or making a fake nest, will let their parents continue to care for them. Luckily, most birds are cared for by both their mother and father, so they're almost never actually orphaned. Their parents will take much better care of them than any human ever possibly could!

Nestlings and hatchlings can't walk or fly, so unless a predator (like a cat) carried them, their nest is probably very close. Check in trees and bushes nearby. Have a look around and see if you can find the nest. Remember that not all birds (especially starlings and sparrows!) nest in trees, so check nooks and crannies in buildings. Look for parent birds flying to and from a nest.

If the baby looks healthy and you are able to get it back into its original nest, do so. Watch from a distance for 2 hours to make sure the parents are coming back to feed the baby.

If you cannot find the nest, or the nest is not reachable, or the parents do not come back, keep the baby dark, quiet, and warm, don't give it any food or water, and contact a wildlife rehabilitator for advice.

For information on how to create a new nest, if the original was destroyed, please visit: <https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/how-to-help-baby-birds/nestling-songbird/>

### Finding a Wildlife Rehabilitator

Unfortunately, TWC cannot admit baby songbirds. To find an alternate wildlife rehabilitator, please refer to the Ministry of Natural Resources and Forestry list of licensed wildlife rehabilitators that may be able to care for the baby songbird: <https://www.ontario.ca/page/find-wildlife-rehabilitator>.

or TWC's website at:

<https://www.torontowildlifecentre.com/wildlife-emergency-rescue-hotline/how-to-help-orphaned-baby-wild-animals/how-to-help-baby-birds/songbird-rehabilitator/>

There are few wildlife rehabilitators within a reasonable drive of the GTA. All wildlife rehabilitators fill up quickly with orphaned wildlife. If you cannot find a rehabilitator with available space to accept the orphaned baby songbird, or if you are unable to transport it, please contact your municipal animal control. (See list below)

Sadly, your municipal animal control can only provide humane euthanasia as they do not have the required training or permits to provide rehabilitation. While opting for euthanasia is not a choice anyone wants to make, there are simply not enough rehabilitators to meet the high demand and orphaned wildlife suffer without proper care.

We must consider that wild animals need proper stimulation, correct diet and minimal stress. Above everything else we must remember that these are wild lives and are designed physically and mentally to live in the wild. Without the potential to be rehabilitated by a licensed centre, humane euthanasia is the kindest option to ensure that the animal does not have a heavily diminished quality of life or means for survival. Your local animal control is able to pick up wild animals and humanely put them to sleep, so they do not suffer without a mother or appropriate care.

### Animal Control Numbers (GTA)

Brampton Animal Services - 905-458-5800

Markham/ Richmond Hill: OSPCA - 1-888-668-7722 ext 319

Mississauga Animals Services- 905-896-5858

Oakville and Milton- Oakville Milton Humane Society - 905-845-1551

Toronto Animal Services - 311

Vaughan Animal Services- 1-855-227-7297



#### 4. High School Presentations

These presentations were developed in collaboration with the Education and Outreach Manager at Toronto Wildlife Centre who expressed a need for updated, curriculum-related wildlife education presentations for high school students. There are stringent curriculum requirements for each grade and subject matter and fitting in extras can prove difficult for teaching professionals. Therefore, it was important that these presentations be able to fit into the curriculum for the grades and subjects to which they are intended.

Further, as students get older and into more complex topics it can be more difficult to engage with them or maintain attention. Each presentation is tailored to the grade and subject matter it is intended for, whilst all presentations cover key ideas and teaching practices such as human-wildlife conflict and wildlife policies, also [might want to use a different word than aso but you used ‘whilst’ twice in one sentence] using storytelling and asset mapping to encourage students to see themselves as solutions to the problems proposed. Each presentation contains a link to a game of wildlife jeopardy specifically developed to help students engage with these concepts, with the jeopardy being used for Grade 11 and 12 students exploring slightly more complex information. The following chart explores the titles, curriculum requirements covered, and main topics explored in each one of the presentations.

	<b>Grade 9: Human Wildlife Conflict and Sustainability</b>	<b>Grade 10: Wildlife Anatomy and How Humans Affect It</b>	<b>Grade 11 &amp; 12 Interdisciplinary Courses: Who Protects the Wildlife in Our Communities</b>	<b>Grade 11 &amp; 12 Sciences: Diversity of Living Things and Social Issues Surrounding Wildlife in Urban Areas</b>
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Curriculum Connections	Grade 9, Academic (SNC1D) Grade 9, Applied (SNC1P) Biology: Sustainable Ecosystems	Grade 10, Academic (SNC2D) Grade 10, Applied (SNC1P) : B1, B2, B3	Grade 11: Community Environmental Leadership, Open <i>Relating to the natural world, developing leadership skills, living responsibly</i> Grade 11: Local Field Studies and Community Links, Open <i>Projects with a community partner. Community based environmental project focused on endangered species, biodiversity, sustainability, and environmental ethics</i> Grade 11- SVN3M, Environmental Science <i>Scientific Solutions to Contemporary</i>	Grade 12: Biology and Human Development, University Preparation <i>current social issues facing humans and the environment</i> Grade 11: Biology, SBI3U <i>Diversity of living things</i> Grade 11: Biology, SCI3C <i>Anatomy of Mammals</i> Grade 12: Biology, SVI4U <i>Population Dynamics</i>
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			<i>Environmental Challenges</i> Grade 11: SVN3E: Workplace Preparation <i>Human Impact on the Environment</i> <i>Natural Resource Science and Management</i>	
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<b>Topics Covered</b>				
<b>Human-Wildlife Conflict</b>	Yes	Yes	Yes, however less directly	Yes
<b>Asset-mapping</b>	Yes	Yes	Yes	Yes
<b>Wildlife Jeopardy</b>	Yes, <a href="https://jeopardylabs.com/play/toronto-wildlife-centre">https://jeopardylabs.com/play/toronto-wildlife-centre</a>	Yes, <a href="https://jeopardylabs.com/play/toronto-wildlife-centre">https://jeopardylabs.com/play/toronto-wildlife-centre</a>	Yes, <a href="https://jeopardylabs.com/play/twc-25">https://jeopardylabs.com/play/twc-25</a>	Yes, <a href="https://jeopardylabs.com/play/twc-25">https://jeopardylabs.com/play/twc-25</a>
<b>Story-telling practices</b>	Yes, the gosling that fell down a sewer in Toronto	Yes, Faith the coyote that was caught in an illegal snare trap	No	Yes, pigeons removed from a bridge project in Toronto and Faith the coyote
<b>Wildlife and Environmental Policies</b>	Yes, Draft Biodiversity Strategy	No	Yes, Draft Biodiversity Strategy, Ford Government Vs Cormorants	No
<b>Careers in Wildlife Rehabilitati</b>	yes	Yes	Yes	Yes

<b>on and Rescue</b>				
<b>Wildlife Anatomy</b>	No	Yes	No	Yes
<b>The Tragedy of Becoming Common</b>	No	No	No	Yes

#### 4.1 Curriculum Relevant Presentation for Grade 9 Students

##### Curriculum Connections

Grade 9, Academic (SNC1D)

Grade 9, Applied (SNC1P)

Biology: Sustainable Ecosystems

Resources:

<https://jeopardylabs.com/play/toronto-wildlife-centre>

- This is a jeopardy game that I developed on jeopardylabs.com

<https://www.flap.org>

<https://www.toronto.ca/legdocs/mmis/2018/pe/bgrd/backgroundfile-116043.pdf>

This presentation focuses on the concept of the urban ecosystem, and the way that humans and wildlife interact in the city on a daily basis, how animals can come into harm because of our actions and our infrastructure. The students will play a game of Jeopardy that is focused on human-wildlife conflict with categories including: “pesky” situations, discarded

items, infrastructure, pets and wildlife and “is this normal?”. We then discuss a story of triumph for a small gosling that fell down a sewer in Toronto, that Toronto Wildlife Centre rescued. This story provides a great example of how communities can rally around something that they care about. The students will be led into an activity of asset mapping to explore how their knowledge, skills and resources can help mitigate human-wildlife conflict. This will lead into a discussion of wildlife policies and how they can affect animals. Using the draft Biodiversity Strategy as an example, we explore some issues within this strategy and encourage students to contact their local MPs. Finally, we discuss future careers in wildlife rescue and rehabilitation.



Notes: Welcome. Brief Explanation of what Toronto Wildlife Centre does: with integrated parts including the Wildlife Hotline, Wildlife Rescue, Wildlife Hospital, Wildlife Rehabilitation and Education and Outreach we are the busiest wildlife centre in Canada and the only wildlife rehab centre in the GTA. Generally, calls come into our hotline about sick, injured or orphaned animals. From there, our staff either directs the member of the public to bring in the animal directly or coordinates a rescue from our team. Once in hospital the animal receives an assessment and any necessary treatment and then will often spend some time staying in our rehabilitative care until they are well enough to be released. However, Education and Outreach is SO important as many of the situations which end up causing harm to wildlife could be avoided



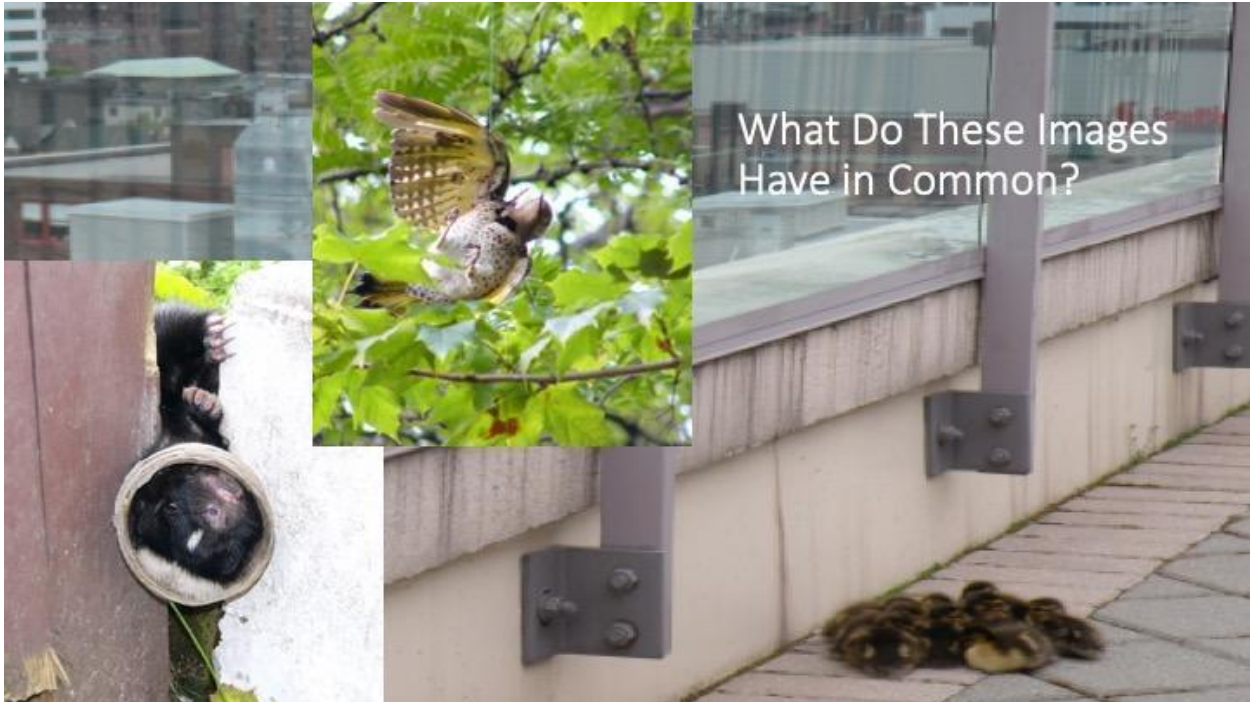
if people were educated about the consequences of their actions and how to coexist with wildlife in the city.



## What is Human-Wildlife Conflict?

Notes: Open this up to students first- if you had to define human-wildlife conflict, what does that mean to you? Can you think of examples we see in our everyday lives? After some input define as: human-wildlife conflict is something that occurs when wildlife requirements overlap human populations, often creating costs for both groups (perceived as conflict)





Notes: These ducklings are on a rooftop with no way down, this bird is caught in string, this skunk has a ring of plastic cones (McFlurry lids) around its head. Whether it be from our litter/discarded items or our infrastructure, there is a lot that wildlife has to cope with in an urban environment.

Can you think of some examples of Human-Wildlife Conflict?

- Birds colliding with windows
- Waterfowl becoming entangled in fishing gear
- Birds being attacked by domestic cats
- Raccoons and skunks getting foreign objects stuck to their bodies (i.e; garbage)
- Ducks and Geese nesting on high rise buildings



Notes: This task can be given by teacher day before and now hear what the kids have to contribute and what their ideas are. If that has not happened give them a chance to break into pairs with each pair coming up with at least 3 potential ways in which human activity or infrastructure effects wildlife

There are some easy instances that come to mind that affect almost every wildlife species we can think of that we see around the city on a daily basis. Some of the conflict is driven by our infrastructure, such as birds colliding with windows or nesting on high rise buildings. Some of the conflict is driven by our direct actions such as leaving garbage unsecured or allowing domestic cats to free roam outdoors.



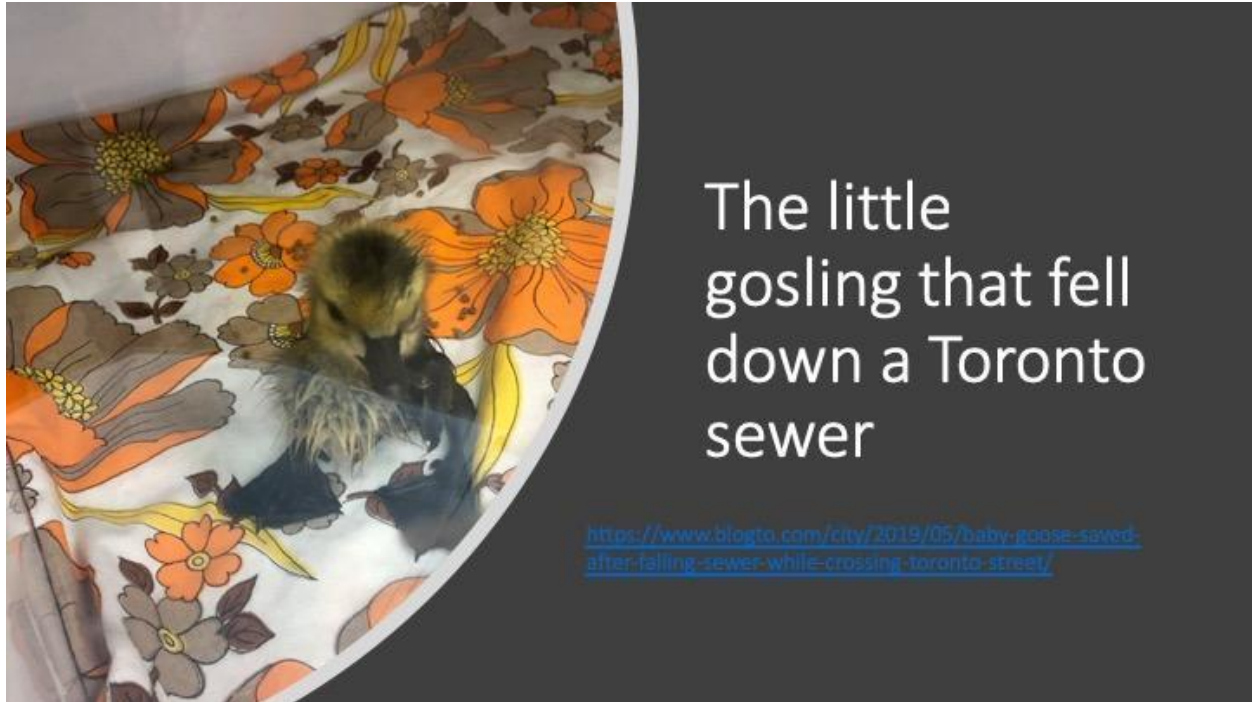
## Wildlife Jeopardy

- Wildlife can become harmed by our actions or infrastructure in ways we would never consider

<https://jeopardylabs.com/play/toronto-wildlife-centre>

Notes: This game of jeopardy was specifically designed to explore many of the issues of conflict between people and wildlife in urban environments. Wildlife can become harmed by our actions or infrastructure in ways that we would never even consider. Such as this Canada Goose who became entangled and trapped in a soccer net. We are going to break into groups and play a game of jeopardy to get a better understanding of how humans and wildlife may conflict in the city. (if say 30-person classroom, split into 5 groups of 6). If you would like you can pick a leader that will “buzz in” (of choice, can get each group to pick a wildlife noise or use hand raising method). Winners will receive TWC mugs. We’re going to learn a lot through the course

of this game and then discuss it afterwards. Jeopardy password is torontowildlifecentre; the website keeps track of score. The rules will be that of normal jeopardy; we will pick which group starts by each “leader” picking a number, the number closest to the one I am thinking starts. As long as you are getting answers correct, you will continue to choose category and value. Answers should be in the form of a question.



Notes: Tell the story about this little gosling, how a chain of people got involved (member of the public contacting Blog TO, blog TO contacting us, people tweeting to the mayor wanting to know how the gosling is doing etc). This story shows how much people care when we give them a chance, everyone wants to help, everyone wants to be involved. This story also showed that people often don't know who to contact or who can actually help with wildlife in the city. TWC is the only licensed rehab centre in the GTA. Unfortunately, city funded services such as City of Toronto Animal services do not have permits to care for or rehab wild animals.



## How can we all help?

- Asset Mapping

You are all *experts* on your local community, resources, culture and priorities for change

What tools are at your disposal to help mitigate these problems?



Notes: Asset mapping makes the students look at themselves as the solution, we are not the ones with all the answers. You can even draw on a board at this point with the centre just being “how can we help?” branch out into categories like “in my everyday life” – secure garbage, inform others, become involved in community clean ups. Go deeper. Can you write letters to local MPs?

## Wildlife and Environmental Policies

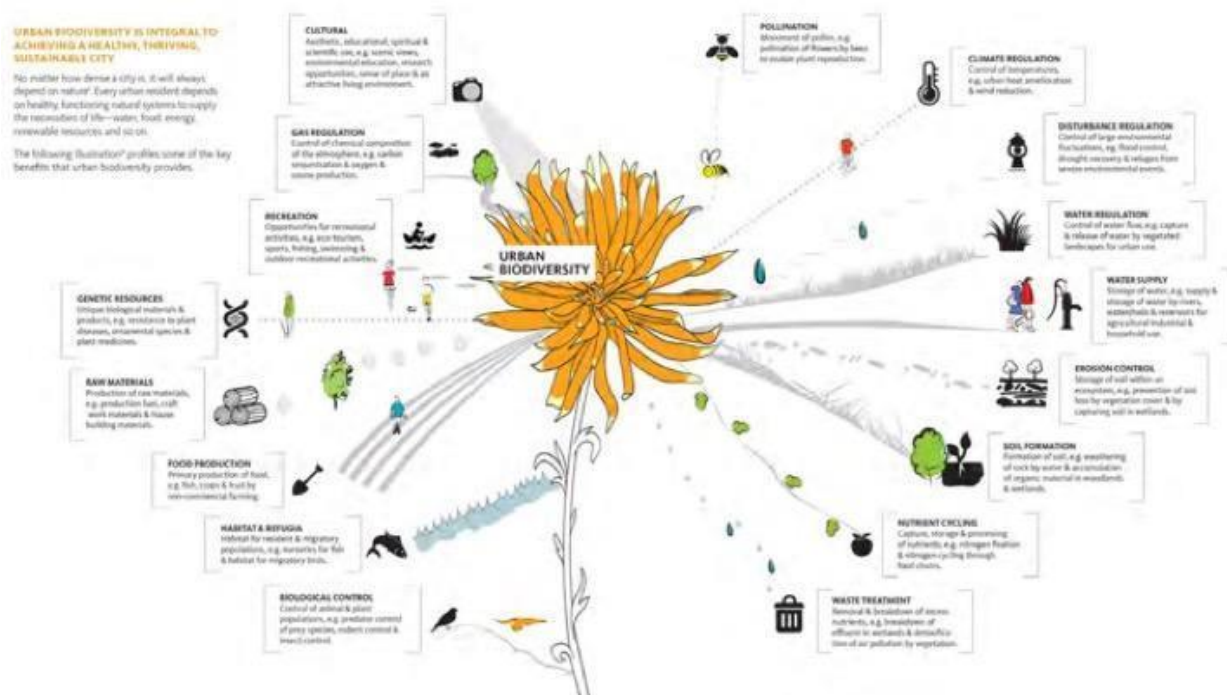
- Another way we can all help is by being aware of the problems wildlife in our city faces and approaching people in local government about these issues
- You may always contact your local MP

Draft Biodiversity Strategy:

- Was released for public review in July 2018 with Public consultations in February and March of 2019.



Notes: Introducing another “how we can help” strategy which includes engaging with local government about issues that matter to us. The draft biodiversity strategy is a great example.

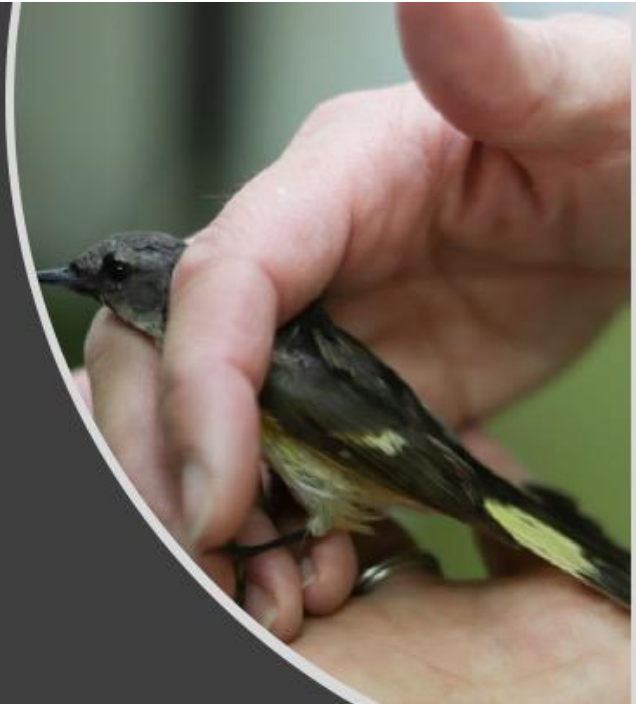


Notes: A graphic from the draft biodiversity strategy. Take a moment to explore the components, we will be focusing on the “habitat and refugia” that the introduced natural spaces will create.

Source: City of Toronto (2018). *THE DRAFT BIODIVERSITY STRATEGY FOR TORONTO*. Retrieved from <https://www.toronto.ca/legdocs/mmis/2018/pe/bgrd/backgroundfile-116043.pdf>

## Addressing Current Issues

- Creating more habitat for migratory birds is great however as we have discussed, the infrastructure of the city isn't overly bird friendly
- We need to address current problems such as the amount of migratory birds that hit windows in the city
- Organizations such as Toronto Wildlife and FLAP Canada are currently taking care of this problem, with FLAP working to safe guard migratory birds, focusing on education and policy
- Toronto Wildlife helps them with the rehabilitation of many of these birds



Notes: Point out that in the graphic from the biodiversity strategy on the last slide, it points out that urban biodiversity creates habitat for migratory birds. This is great and may invite more wildlife into the city. However, there is already a problem in the city with our infrastructure and activities creating challenges for wild animals. Currently the work to safeguard wildlife and to rehabilitate those that have been harmed is carried out by Toronto Wildlife, a non-government and not for profit organization. It would be amazing if our city funded these endeavors or dedicated resource to helping the existing problems before exacerbating them. We can tell our city counsellors what we want! Voice your opinion. Homework for post presentations: write letters to local city counsellors about urban wildlife and how we can better help them.

## Careers in Wildlife Rehabilitation and Rescue

- Wildlife Rescue Team
- Wildlife Emergency Hotline Operator
- Wildlife Rehabilitation Staff



Notes: Explain the roles of the people in each department, how they contribute to the organization and how the kids may seek out to become involved as a career path or volunteer (once they are 18).



Thank you  
For more information visit [torontowildlifecentre.com](http://torontowildlifecentre.com)

Notes: Thank you for listening and exploring together the problems that our cities wildlife faces on a daily basis and what we can do to limit this! We encourage you to go forth and share what

you have learned today, even with one other person. If we all work together in a conscious effort to coexist with urban wildlife, we can accomplish a tremendous amount.

## 4.2 Curriculum Relevant Presentation for Grade 10 Students

Grade 10 Presentation

### Curriculum Connections

- Grade 10, Academic (SNC2D)
- Grade 10, Applied (SNC1P) : B1, B2, B3

Resources:

<https://jeopardylabs.com/play/toronto-wildlife-centre>

<https://www.flap.org>

<https://www.torontowildlifecentre.com/coyote-rescued-from-kill-snare/?fbclid=IwAR27jUwMYejgFNCGOxdKvNMZI5a1fGkIKRG3cC27UWxmbALXJkeytsywXXA>

<https://www.torontowildlifecentre.com/how-to-help-our-feathered-friends-during-migration-season/?fbclid=IwAR13OxIwloQ1g7QG9nqj24ShCpjMImW3UIH5d1NEEkZ7EAgR173oi1sMZfY>

This presentation focuses on wildlife anatomy and how wildlife is affected by human actions and infrastructure given their unique life history traits. We first discuss the concept of human-wildlife conflict and play a round of Jeopardy focused on illuminating common instances of conflict in urban environments. Then, we move into a story telling practice as we explore the story of Faith, a male coyote that was caught in a kill snare who was rescued by Toronto Wildlife, underwent surgery and has since happily returned to the wild. This story is important because it highlights a species that people often have a hard time feeling empathetic towards. The story is gripping and as we discuss the trauma to her anatomy (the snare cut into her trachea), we begin to paint a picture of how severe the consequence of human action can be on



wild animals. We then explore both turtles and avians, as they have unique anatomy and are impacted by humans in a wide variety of ways. The students will then be led into an activity of asset mapping to explore how their knowledge, skills and resources can help mitigate the problems wildlife faces. Finally, we discuss future careers in wildlife rescue and rehabilitation.



Notes: Welcome. Brief Explanation of what Toronto Wildlife Centre does: with integrated parts including the Wildlife Hotline, Wildlife Rescue, Wildlife Hospital, Wildlife Rehabilitation and Education and Outreach we are the busiest wildlife centre in Canada and the only wildlife rehab centre in the GTA. Generally, calls come into our hotline about sick, injured or orphaned animals. From there, our staff either directs the member of the public to bring in the animal directly or coordinates a rescue from our team. Once in hospital the animal receives an assessment and any necessary treatment and then will often spend some time staying in our rehabilitative care until they are well enough to be released. However, Education and Outreach is SO important as many of the situations which end up causing harm to wildlife could be avoided if people were educated about the consequences of their actions and how to coexist with wildlife in the city



## What is Human-Wildlife Conflict?

Notes: Open this up to students first- if you had to define human-wildlife conflict, what does that mean to you? Can you think of examples we see in our everyday lives? After some input define as: human-wildlife conflict is something that occurs when wildlife requirements overlap human populations, often creating costs for both groups (perceived as conflict).

## Wildlife Jeopardy

- Wildlife can become harmed by our actions or infrastructure in ways that we would never consider

<https://jeopardylabs.com/play/toronto-wildlife-centre>



Notes: Wildlife can become harmed by our actions or infrastructure in ways that we would never even consider. Such as this Canada Goose who became entangled and trapped in a soccer net. We are going to break into groups and play a game of jeopardy to get a better understanding of how humans and wildlife may conflict in the city. (if say 30-person classroom, split into 5 groups of 6). If you would like you can pick a leader that will “buzz in” (of choice, can get each group to pick a wildlife noise or use hand raising method). Winners will receive TWC mugs. We’re going to learn a lot through the course of this game and then discuss it afterwards. Jeopardy password is [torontowildlifecentre](http://torontowildlifecentre.com) ; the website keeps track of score. The rules will be that of normal jeopardy; we will pick which group starts by each “leader” picking a number, the number closest to the one I am thinking starts. As long as you are getting answers correct, you will continue to choose category and value. Answers should be in the form of a question.



Notes: Faith is the coyote that you saw at the beginning of the presentation when we talked about what Human-Wildlife conflict is. Faith represents an extreme escalation of this conflict and was caught in an illegal kill snare that cut deep into his throat, partially strangling him and severing part of his trachea. Click on “The Story of Faith’s rescue” to be redirected to a short (2 min) video about Faith’s original rescue. This story is heart wrenching and highlights a species that a lot of people see in a negative light, coyotes. But I think it shows how devastating it can be to see them harmed or injured, especially knowing that a human being was responsible.



Faith was successfully rehabilitated and released and has since been spotted in the wild with his mate, who waited for him the entire time and often called for him at night

### Faith's Release



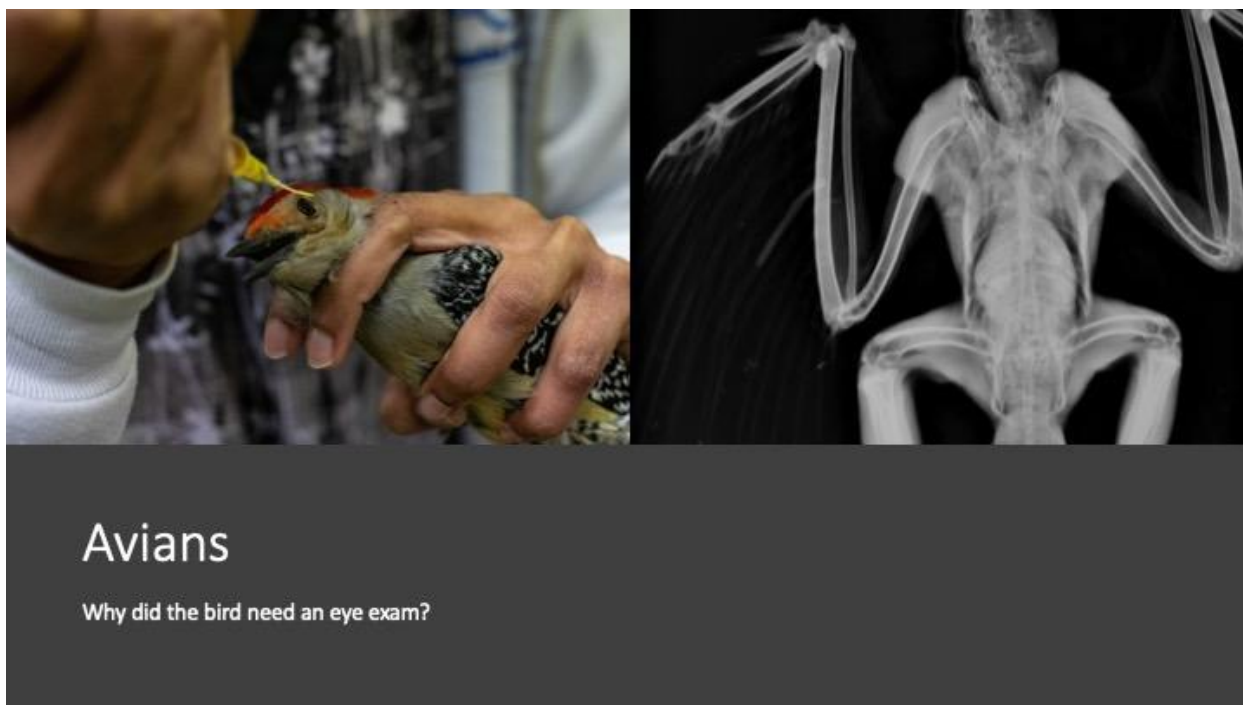
Notes: To continue the story, we must include the happy ending. Thanks to the tireless efforts of TWC and Toronto VEC, Faith's surgery and rehabilitation was a success and he was released back to his mate. This story was tragic, and although the ending was happy it holds a powerful message: we have to do better. Our actions can have profound impacts on other living beings.



## Wildlife Anatomy

Why did the turtle cross the road?

Notes: Give the students a chance to answer the question “why did the turtle cross the road?”. We are going to talk about how wildlife and how their different anatomy exacerbates the struggles they face in urban environments. On the right you see a snapping turtle found at the side of the road. During May/ June, turtles can often be seen crossing roadways, which poses a major challenge to them in terms of survival and they have a high incidence of road mortality. However, it is important to realize WHY they are crossing the road, the answer to that question is “to lay their eggs”. The substrate found on our roadsides is prime for turtle nesting. Unfortunately, getting there and back poses major risks to not only the life of that turtle, but all the potential lives they carry. Turtle survivorship has high stakes because it takes 10-15 years for turtles to even reach sexual maturity which means that if they do not make it to that age, they have not even replaced themselves in the population. Even if a turtle safely crosses the road, lays their eggs and makes it back, the eggs are so prone to predation. Given the human induced challenges they face (roadways) combined with their life history traits, it is no wonder that 7/8 Ontario turtle species are considered Species at Risk.



Notes: Give the students a chance to answer the question “Why did the bird need an eye exam?” Then answer that when a bird collides with a window, they can get ulcers, or scratches, on their eyes. Putting fluorescence on the eye and then looking into it helps to highlight any ulcers on the



eye that will need treatment. Birds have such interesting anatomy that can be heavily influenced by humans, our infrastructure and our pets.

Let's group potential injuries into these 2 categories

Word bank:  
 Ruptured Air Sacs  
 Fractures  
 Missing tail feathers  
 Eye Ulcers  
 Head Trauma  
 Puncture Wounds  
 Bruising

Hit on Window

Attacked by Cat

Notes: Give the students a couple minutes to break into pairs and group these potential avian injuries with the incident that may have caused them. Some of them can fit into both which they will hopefully recognize, and you can disclose that before they start. Solutions: Hit on Window can cause fractures, eye ulcers, head trauma and bruising. Attacked by cat can result in ruptured air sacs, fractures, missing tail feathers, puncture wounds, bruising. Can explain what an air sac is: “Birds do not have a diaphragm; instead, air is moved in and out of the respiratory system through pressure changes in the air sacs. Muscles in the chest cause the sternum to be pushed outward. This creates a negative pressure in the air sacs, causing air to enter the respiratory system. Expiration is not passive but requires certain muscles to contract to increase the pressure on the air sacs and push the air out.”

Source: PetCoach. (2019). How the Respiratory System of Birds Works | PetCoach. Retrieved June 21, 2019, from <https://www.petcoach.co/article/respiratory-system-of-birds-anatomy-and-function/>

## What Can We Do?

### Asset Mapping:

- You are all *experts* on your local community, resources, culture and priorities for change
- What tools are at your disposal to help mitigate these problems?



Notes: Let's review the incidents, behaviors and infrastructure that contributed to these problematic situations for wildlife. For turtles, roadways and the cars that drive on them. For birds, collisions with windows/ buildings and being attacked by free roaming domestic cats. Asset mapping makes the students look at themselves as the solution, we are not the ones with all the answers. You can even draw on a board at this point with the centre just being "how can we help?" branch out into categories like "in my everyday life" – keep domestic cats indoors, inform others, help turtles cross roadways and slowdown in areas they are more likely to be spotted. Go deeper. Can you write letters to local MPs? Maybe they know a place where turtles are often spotted but there is no "turtle crossing" sign – contact your municipality!



Notes: More on “how we can help”, ideas for how to bird proof windows, we can also support organizations like FLAP (Fatal Light Awareness Program) Canada who lobby for the city to adopt more bird friendly practices. Resource: <https://www.torontowildlifecentre.com/how-to-help-our-feathered-friends-during-migration-season/?fbclid=IwAR13OxIwloQ1g7QG9nj24ShCpjMImW3UIH5d1NEEkZ7EAgr173oi1sMZfY>

## Careers in Wildlife Rehabilitation and Rescue

- Wildlife Rescue Team
- Wildlife Emergency Hotline Operator
- Wildlife Rehabilitation Staff



Notes: Explain the roles of the people in each department, how they contribute to the organization and how the kids may seek out to become involved as a career path or volunteer (once they are 18).



Thank you!

For more information please visit: [torontowildlifecentre.com](http://torontowildlifecentre.com)

Additional resources:

<https://www.flap.org>

<https://ontarioturtle.ca>

Notes: Thank you for listening and exploring together the problems that our cities wildlife faces on a daily basis and what we can do to limit this! We encourage you to go fourth and share what



you have learned today, even with one other person. If we all work together in a conscious effort to coexist with urban wildlife, we can accomplish a tremendous amount.

Additional resources include the website for FLAP Canada and the Turtle Trauma Centre

### 4.3 Curriculum relevant presentation for grade 11 and 12 Interdisciplinary Courses

#### Curriculum Connections

- Grade 11: Community Environmental Leadership, Open
  - Relating to the natural world, developing leadership skills, living responsibly
- Grade 11: Local Field Studies and Community Links, Open
  - Projects with a community partner. Community based environmental project focused on endangered species, biodiversity, sustainability, and environmental ethics
- Grade 11- SVN3M, Environmental Science
  - Scientific Solutions to Contemporary Environmental Challenges
- Grade 11: SVN3E: Workplace Preparation
  - Human Impact on the Environment
  - Natural Resource Science and Management

Resources:

<https://jeopardylabs.com/play/twc-25>

<https://www.flap.org>

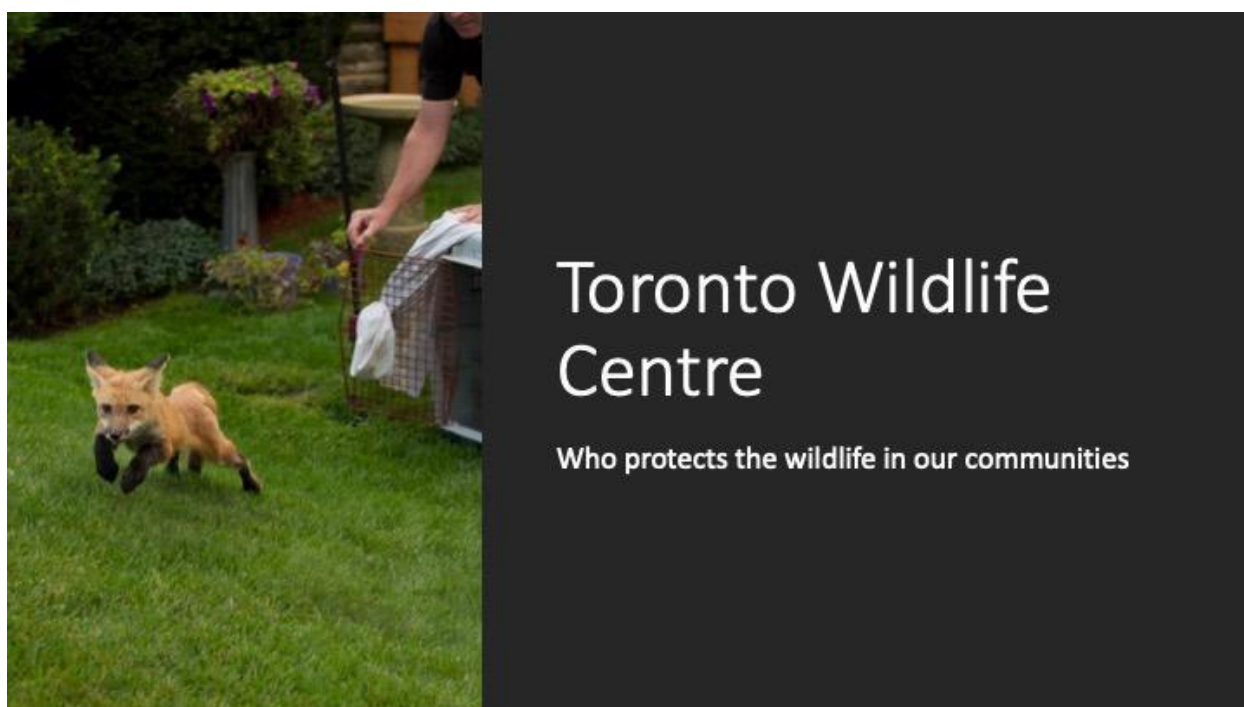
<https://www.canada.ca/en/environment-climate-change/services/migratory-birds-legal-protection/convention-act.html>

<https://www.ofah.org/issues/cormorants/>

<https://www.torontowildlifecentre.com/two-awful-cruelty-situations-in-one-day/>

This presentation focuses on the complexities of wildlife protection, or lack thereof in urban areas. We explore issues such as the layers of municipal, provincial and federal regulations pertaining to wildlife and species or situations that remain inadequately protected or regulated.

We tie in natural resource management to explore stakeholder positions surrounding current issues in wildlife management. By touching on the entangled concept of ethics and legality, we encourage students to relate to their natural world and become community leaders in moving towards a more progressive human-wildlife coexistence in urban areas. By starting with a gripping story of wildlife mistreatment, we grapple with the concept of whom protects wildlife and where the funding for these roles stems from. By the end of the presentation students are encouraged to further engage in their communities, write letters to Members of Parliament, and consider careers pertaining to these topics.



Notes: Welcome. Brief Explanation of what Toronto Wildlife Centre does: with integrated parts including the Wildlife Hotline, Wildlife Rescue, Wildlife Hospital, Wildlife Rehabilitation and Education and Outreach we are the busiest wildlife centre in Canada and the only wildlife rehab centre in the GTA. Generally, calls come into our hotline about sick, injured or orphaned animals. From there, our staff either directs the member of the public to bring in the animal directly or coordinates a rescue from our team. Once in hospital the animal receives an assessment and any necessary treatment and then will often spend some time staying in our rehabilitative care until they are well enough to be released. However, Education and Outreach is SO important as many of the situations which end up causing harm to wildlife could be avoided

if people were educated about the consequences of their actions and how to coexist with wildlife in the city

Today we will be exploring the concept of our local environments, the wildlife within them, and the laws and organizations that do or do not protect them

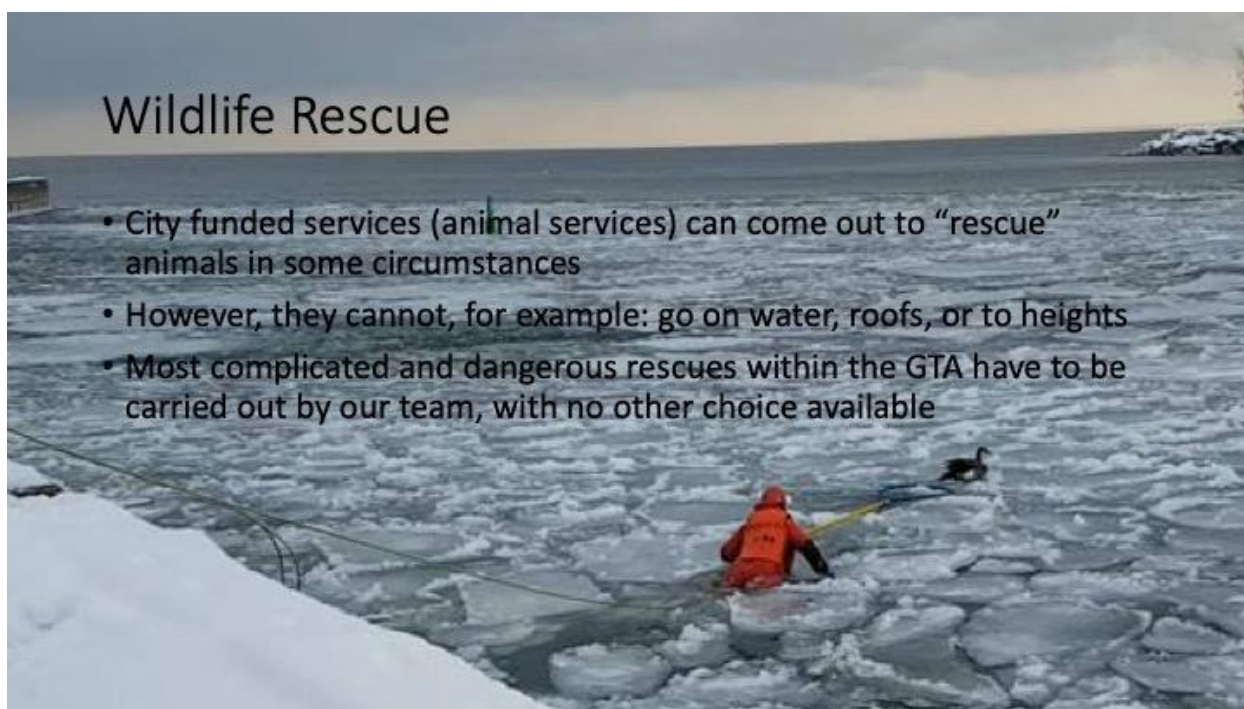


Notes: Can be given as homework the day before the presentation, we want to explore the question: “is the current protection of wildlife in the city adequate?” “Are animal protection or rescue agencies or organizations publicly funded?” The answer from TWC’s perspective would be no on both accounts. However, there are several players in the arena. There are also several layers of federal, provincial and municipal regulations involved. To shed some light on the complexity of these issues, I am going to tell a story about these Rock Pigeons. Legally, Pigeons can be a bit of a grey area, they are not federally protected under the Migratory Birds Convention Act like most bird species in Ontario, they are only protected from Cruelty under the Criminal Code in Canada. The story of the baby pigeons pictured here: Towards the end of the day 17 baby pigeons arrived at Toronto Wildlife Centre, crammed into a hot, filthy closed box. Two babies had already died and were being trampled by the others. Many others were in respiratory distress.

The nestlings, all with parents caring for them, had been “cleared out” from a bridge in the area of South Kingsway and The Queensway for construction work. The company, who were reported to cruelty investigation, were scheduled to work on another bridge only days later. This is peak breeding season for many wild animals.

Staff were at the centre very late that night caring for the baby pigeons, who had to be stabilized and were too young to eat on their own.

This act was cruel. However, no one is likely to be prosecuted for the mistreatment of these animals who were taken from caring parents because they posed an inconvenience. Wildlife is not something that we can just rid of or remove when we feel like it, they are living beings. Even when animals are protected, often it is hard to see their cases be heavily prosecuted when no one speaks on their behalf. We know that say, removing a robin’s nest and eggs is an illegal act, but who speaks for those animals?



Notes: In general, cities or municipalities have Animal Services, which are paid for by tax dollars. For instance, there is Toronto Animal Services, Brampton Animal Services, Oakville and Milton Humane Society and Mississauga Animal Services. Most of the officers are not trained to deal with wildlife situations and are not able to conduct more dangerous or risky rescues, due to safety regulations. In general, city funded services will not attempt a rescue at height, go on a rooftop or go onto a body of water (frozen or not frozen). This means that a great number of



rescues must be carried out by Toronto Wildlife Centre, which is not publicly funded, with no other choice for the animals.



- It is difficult to know what is or is not illegal when it comes to wild animals
- There are a number of stakeholders that have an influence on policy surrounding wildlife
- [Wildlife jeopardy](#)

Notes: It can be very difficult to know or understand what is illegal when it comes to wildlife. Surrounding most big issues or topics, such as wildlife or the environment, there are a number of groups or organizations that occupy what is called a policy community and can influence policy surrounding a given issue. We are going to play a game of Jeopardy to see what you already know and learn some more about human-wildlife conflicts within the city, stakeholders and the legality of various wildlife situations. We are going to break into groups, (if say 30-person classroom, split into 5 groups of 6). If you would like you can pick a leader that will “buzz in” (of choice, can get each group to pick a wildlife noise or use hand raising method). Winners will receive TWC mugs. We’re going to learn a lot through the course of this game and then discuss it afterwards. Jeopardy password is torontowildlifecentre ; the website keeps track of score. The rules will be that of normal jeopardy; we will pick which group starts by each “leader” picking a number, the number closest to the one I am thinking starts. As long as you are getting answers correct, you will continue to choose category and value. Answers should be in the form of a question

## Ford Government Vs Cormorants

The Ministry of Natural Resources and Forestry has tabled a proposal to have Double-Crested Cormorants be hunted for 9 months of the year, where each individual could kill up to 50 cormorants per day



Notes: The Ministry of Natural Resources and Forestry has tabled a proposal to have Double-Crested Cormorants be hunted for 9 months of the year, where each individual could kill up to 50 cormorants per day. This proposal does not include population targets and no science is cited. A lot of people have a negative view of this species and the rationale includes the statements that they eat too many fish and cause trees to die. They are an animal that are seen as a nuisance, their nests kill the trees they choose, and they deplete fish populations that people want to catch. However, this is a native species. Is this ethical? Right? Yet, it could become *legal*. We are going to spend some time exploring how stakeholders can influence such proposals and the decisions that arise from them.

## Stakeholders: The Ontario Federation of Anglers and Hunters

Fishing and related activities are a billion dollar industry in Ontario, so organizations such as OFAH have a large influence on policies surrounding fish, their habitats and things that may affect fishing (i.e; cormorants)



Notes: A stakeholder is simply someone who has an interest or concern about a given issue, or a stake. This is often related to business and capital but also applies to the public, scientists, media and various other groups whether they be government or non-government. Unfortunately, stakeholders that do fall on the business side of things tend to have a greater say in the outcome. OFAH is a politically influential organization and they support this proposal.

## The Round Table

- Ontario Federation of Anglers and Hunters (OFAH)
- Animal Alliance of Canada
- Government Scientists
- A member of the public



A roundtable is simply a conference or discussion geared towards a certain topic. Often stakeholders involved in a given issue will be invited to attend a roundtable where the issue will be discussed more deeply, and each representative can present their point of view. These are groups/examples of who could have potentially been involved on this issue, all of which have spoken out about the proposal. OFAH openly supports the proposal, the Animal Alliance of Canada is against it, Government Scientists are warning of the dangers of such an extensive hunt, both for the safety of people and for ecological interactions that could be highly affected. Viewpoints from members of the public vary drastically depending on their personal interests. \*For deeper learning and understanding it is suggested that after this presentation the class do a mock roundtable, assigning stakeholder positions to various groups and researching the position assigned to them.

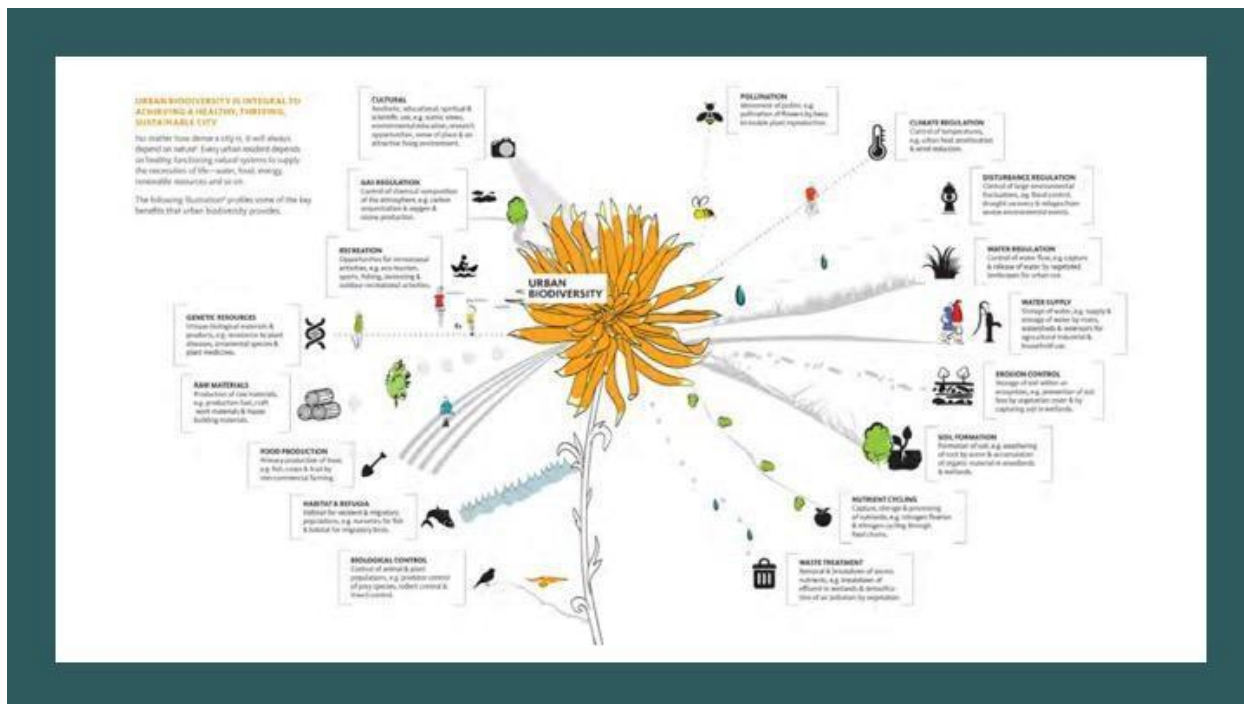


**Wildlife and Environmental Policies**

- One way we can all help is by being aware of the problems wildlife in our city faces and approaching people in local government about these issues
- You may always contact your local MP
- Draft Biodiversity Strategy:
  - Was released for public review in July 2018 with Public consultations in February and March of 2019.

Notes: Introducing a “how we can help” strategy which includes engaging with local government about issues that matter to us. The draft biodiversity strategy is a great example. The draft biodiversity strategy is aimed at bringing more green space and habitat into the city, however there is a lot of consequence that could be associated with this and it needs to be explored more deeply





Notes: A graphic from the draft biodiversity strategy. Take a moment to explore the components, we will be focusing on the “habitat and refugia” that the introduced natural spaces will create

## Addressing Current Issues


- Creating more habitat for migratory birds is great however as we have discussed, the infrastructure of the city isn't overly bird friendly
- We need to address current problems such as the amount of migratory birds that hit windows in the city
- Organizations such as Toronto Wildlife and FLAP Canada are currently taking care of this problem, with FLAP working to safe guard migratory birds, focusing on education and policy
- Toronto Wildlife helps them with the rehabilitation of many of these birds

Notes: Point out that in the graphic from the biodiversity strategy on the last slide, it points out that urban biodiversity creates habitat for migratory birds. This is great and may invite more wildlife into the city. However, there is already a problem in the city with our infrastructure and

activities creating challenges for wild animals. Currently the work to safeguard wildlife and to rehabilitate those that have been harmed is carried out by Toronto Wildlife, a non-government and not for profit organization. It would be amazing if our city funded these endeavors or dedicated resource to helping the existing problems before exacerbating them. We can tell our city counsellors what we want! Voice your opinion. Homework for post presentations: write letters to local city counsellors about urban wildlife and how we can better help them.

## How Can We Help?

- Asset mapping
- You are all *experts* on your local community, resources, culture and priorities for change
- What tools are at your disposal to help mitigate these problems?



Notes: Asset mapping makes the students look at themselves as the solution, we are not the ones with all the answers. You can even draw on a board at this point with the centre just being “how can we help?” branch out into categories like “in my everyday life” – secure garbage, inform others, become involved in community clean ups. Go deeper. Can you write letters to local MPs? Can you partner with local groups? Choose to live more responsibly and encourage others to do the same by becoming a leader? Are there scientific solutions to some of these problems? What about natural resource management?

## Careers in Wildlife Rehabilitation and Rescue


- Wildlife Rescue Team
- Wildlife Emergency Hotline Operator
- Wildlife Rehabilitation Staff



Notes: Explain the roles of the people in each department, how they contribute to the organization and how the kids may seek out to become involved as a career path or volunteer (once they are 18). Also mention other career options they could use to maybe one day “have a seat at the table” or have an influence in situations we discussed. Could actually aim to become part of local government, be a policy advisor, a scientist, work with a non-government organization like Environmental Defence (as well as Toronto Wildlife Centre, FLAP).

Thank you!  
For more information  
please visit:  
[torontowildlifecentre.com](http://torontowildlifecentre.com)  
Other resources:

- <https://www.atah.org>
- [FLAP.org](http://FLAP.org)
- [Environmentaldefence.ca](http://Environmentaldefence.ca)
- [Draft Biodiversity Strategy](#)



Notes: Thank you for listening and exploring together the problems that our cities wildlife faces on a daily basis and what we can do to limit this! We encourage you to go forth and share what you have learned today, even with one other person. If we all work together in a conscious effort to coexist with urban wildlife and act as the voice for animals that cannot stand up for themselves, we can accomplish a tremendous amount.

### 3.4 Curriculum relevant presentation for grade 11 and 12 Science Courses

Grade 11 and 12 Presentation for Science Courses

#### Curriculum Connections

- Grade 12: Biology and Human Development, University Preparation  
*current social issues facing humans and the environment*
- Grade 11: Biology, SBI3U  
*Diversity of living things*
- Grade 11: Biology, SCI3C  
*Anatomy of Mammals*



- Grade 12: Biology, SVI4U  
*Population Dynamics*

Pre-presentation homework, if able:

Make a list of species you believe exist in urban areas, just based on what you see on a daily basis. Look for news stories involving these animals and try to create “personality profiles” of how the media portrays different animals such as raccoons, geese, coyotes, cormorants, owls, turtles and deer. Which are cast as rare? Pests? Dangerous?

Resources:

<https://jeopardylabs.com/play/twc-25>

<https://www.torontowildlifecentre.com/coyote-rescued-from-kill-snare/>

This presentation focuses on the diversity of living things in urban environments and how this creates social issues resulting in both human-human and human-wildlife conflicts. We explore the topic of human-wildlife conflict and the social issues that arise from wildlife and humans occupying mutual spaces. Using storytelling practices, we explore some impactful stories of wildlife rescue such as the story of Faith. Faith is a male coyote that was caught in a kill snare who was rescued by Toronto Wildlife, underwent surgery and has since happily returned to the wild. This story is important because it highlights a species that people often have a hard time feeling empathetic towards. We also discuss “the tragedy of becoming common” and the difficulty that arises when humans view species such as pigeons as pests and place more value on species that are rare. We use a game of Wildlife Jeopardy to explore the arena of laws, stakeholders and common “pest” situations that exist in urban environments, which invites students to consider the ways in which wildlife may be affected by our actions. Often, due to their varying anatomy and life history traits, wildlife is impacted by our actions, inactions and infrastructure in ways that we don’t even consider. Finally, we move through an exercise of asset mapping to encourage the students to explore how their personal passion, skills, connections and knowledge can contribute to mitigating these instances of conflict. By touching on careers in

wildlife rehabilitation and rescue we give students the opportunity to consider how they can continue to be a part of the solution in the future.



Notes: Welcome. Brief Explanation of what Toronto Wildlife Centre does: with integrated parts including the Wildlife Hotline, Wildlife Rescue, Wildlife Hospital, Wildlife Rehabilitation and Education and Outreach we are the busiest wildlife centre in Canada and the only wildlife rehab centre in the GTA. Generally, calls come into our hotline about sick, injured or orphaned animals. From there, our staff either directs the member of the public to bring in the animal directly or coordinates a rescue from our team. Once in hospital the animal receives an assessment and any necessary treatment and then will often spend some time staying in our rehabilitative care until they are well enough to be released. However, Education and Outreach is SO important as many of the situations which end up causing harm to wildlife could be avoided if people were educated about the consequences of their actions and how to coexist with wildlife



## What is Human-Wildlife Conflict?

Notes: Open this up to students first- if you had to define human-wildlife conflict, what does that mean to you? Can you think of examples we see in our everyday lives? After some input define as: human-wildlife conflict is something that occurs when wildlife requirements overlap human populations, often creating costs for both groups (perceived as conflict). Human relationships with wildlife are complex and multifaceted. Some of the major themes of human-wildlife conflict include the socially constructed character of pests and disease discourse as well as threats posed by wildlife including “dangerous” animals (Schelhas 2004). Issues framed as HWC are often representative of human-human conflicts stemming from differences in opinion or culture surrounding the management of wildlife (Dickman, 2010).

## Social Issues Facing Humans and Wildlife

- Issues framed as HWC are often representative of human-human conflicts stemming from differences in opinion or culture surrounding the management of wildlife (Dickman, 2010)
- Pigeon netting is a common practice in the city but there can be grand differences in opinion as to the most appropriate action to take when approaching a wildlife conflict situation. The polarization of opinions tends to become even more exacerbated when species that are viewed as pests or a danger to the public are involved




Notes: The story behind this pigeon: Small baby pigeons were taken from their nests and left peeping for their parents from within a box; they couldn't fly and their mothers and fathers had been forced away from their babies. Residents of a building hired a company to clean balconies and install pigeon netting to prevent birds from landing there. The adults couldn't reach their babies because of the netting and were sadly forced to leave them behind. Thankfully, the little pigeons were brought to TWC for care and will be fed special formula and seeds until they grow and become independent enough to survive on their own in the wild!



## The Story of Faith

- Coyotes can be the root of huge social issues and both human-wildlife and human-human conflicts in communities
- In a given community one person can be feeding a coyote which will lead to it becoming less afraid of humans, another person will take this brazen behavior as a threat to public safety

[Faith's Story](#)



Notes: Faith is the coyote that you saw at the beginning of the presentation when we talked about what Human-Wildlife conflict is. Faith represents an extreme escalation of this conflict and was caught in an illegal kill snare that cut deep into his throat, partially strangling him and severing part of his trachea. Click on “The Story of Faith’s rescue” to be redirected to a short (2 min) video about Faith’s original rescue. This story is heart wrenching and highlights a species that a lot of people see in a negative light, coyotes. But I think it shows how devastating it can be to see them harmed or injured, especially knowing a human being was responsible.

This story clearly illustrates how human-wildlife conflicts are often social issues or human-human conflicts at their root. The reactions of community members to a local coyote can be so polarized ranging from “we want it dead” to “it is my pet”. These two viewpoints strongly oppose each other and feed the conflicting situation, with some individuals willing to harm or even kill a coyote whilst others continue to feed leading to the coyote being more and more willing to approach people. Whether the coyote is viewed as a danger or a pet, the consequences for the coyote are dire. Unfortunately, it is always best that wildlife view humans as a threat and keep their distance. Faith was the victim of an extreme act by someone who likely feels very threatened by coyotes.



## Faith was successfully rehabilitated

He was released and has since been spotted in the wild with his mate, who waited for him the entire time and often called for him at night

Notes: To continue the story, we must include the happy ending. Thanks to the tireless efforts of TWC and Toronto VEC, Faith's surgery and rehabilitation was a success and he was released back to his mate. This story was tragic, and although the ending was happy it holds a powerful message: we have to do better. Our actions can have profound impacts on other living beings, including both their social lives and anatomy. Faith was badly injured and separated from his mate, although this story has a happy ending, we want to move towards a human-wildlife coexistence where Faith would have never had to suffer in the first place.

## The Tragedy of Becoming Common

- happens in urban ecosystems where wild animals are seen more as pets or pests than actual wildlife

Pests, or common city wildlife	"Rare" and therefore more highly regarded
Geese	Deer
Pigeons	Hawks
Skunks	Swans
Raccoons	Owls
Squirrels	Turtles




Notes: Some scholars speak of the “tragedy of becoming common” that happens in urban ecosystems where wild animals are seen more as pets or pests than actual wildlife (Leong 2009). Human-wildlife conflicts are an integral part of wildlife management in urban ecosystems and therefore must be addressed. Enhancing biodiversity in urban environments can increase the quality of life in those areas. The education of those that live in cities can facilitate the preservation of biodiversity in urban ecosystems (Savard, Clergeau, and Mennechez 2000). Human relationships with wildlife are complex and multifaceted. Some of the major themes of human-wildlife conflict include the socially constructed character of pests and disease discourse as well as threats posed by wildlife including “dangerous” animals (Schelhas 2004). Human-wildlife conflict is currently one of the leading threats to wildlife species, particularly in an urbanizing world (Dickman 2010). As cities expand, so do the number of animals that take up residence within them or along their borders. Species that are threatened by urbanization also tend to face threats from recreation, roads and other human impacts (McKinney 2002). Note that “pest” animals are not only seen as the ones most likely to make a mess or contribute to property damage, they are also often viewed as “dirty” or disease vectors that are capable of transferring disease to humans. Wildlife can carry and transmit diseases, but it is rare for these diseases to affect people as direct contact with the animal is usually necessary for transmission to occur. Part of human social construct is putting heavier value on things that are rarer, and we see this

dichotomy present itself in the way that wildlife species are viewed. I specifically chose this picture of goslings because they are so sweet but will grow up to become Canada Geese which so many people regard in a negative way.

## Wildlife Jeopardy

- Human actions and social constructs can gravely impact the large diversity of living things in urban areas
- Animal anatomy can differ greatly from our own and our actions can affect or harm them in ways we may not consider
- Humans often choose to view wild animals as “pests” when they act in ways that are inconvenient to us, but aligned with their own life history traits
- [Wildlife Jeopardy](#)



Notes: The diversity of living things in urban areas is quite grand and can be heavily impacted by our day to day actions, our infrastructure and even our attitudes towards wildlife. Because wildlife anatomy is so different than our own, animals can become harmed in ways that may not have even occurred to us. Further, it can be very difficult to know or understand what is illegal when it comes to wildlife. Surrounding most big issues or topics, such as wildlife or the environment, there are a number of groups or organizations that occupy what is called a policy community and can influence policy surrounding a given issue. We are going to play a game of Jeopardy to see what you already know and learn some more about human-wildlife conflicts within the city, stakeholders and the legality of various wildlife situations. We are going to break into groups, (if say 30-person classroom, split into 5 groups of 6). If you would like you can pick a leader that will “buzz in” (of choice, can get each group to pick a wildlife noise or use hand raising method). Winners will receive TWC mugs. We’re going to learn a lot through the course of this game and then discuss it afterwards. Jeopardy password is torontowildlifecentre ; the website keeps track of score. The rules will be that of normal jeopardy; we will pick which group starts by each “leader” picking a number, the number closest to the one I am thinking starts. As




long as you are getting answers correct, you will continue to choose category and value. Answers should be in the form of a question.

## How Human-Wildlife Conflict Affects the Unique Anatomies of Wildlife

Some of the most common instances of human-wildlife conflict are as follows:

- Domestic cats attacking wild animals
- Wildlife-vehicle collisions
- Bird-window collisions
- Animals that are hatched or born in dangerous places (i.e; green roofs)
- Animals that become trapped in a building, structure or pool
- Foreign objects that end up on or in wildlife (i.e; oil on feathers, ingestion of plastics)
- Animals that are “kidnapped” because they are assumed to be orphaned (i.e; cottontails that nest in shallow depressions with little parental visitation)
- Animals that are taken from the wild to be held as pets





Notes: We are going to go over some of the circumstances that came up in jeopardy. We are going to talk about how wildlife anatomy and how their different anatomy exacerbates the struggles they face in urban environments. On the right you see a snapping turtle found at the side of the road. During May/ June, turtles can often be seen crossing roadways, which poses a major challenge to them in terms of survival and they have a high incidence of road mortality. However, it is important to realize WHY they are crossing the road, the answer to that question is “to lay their eggs”. The substrate found on our roadsides is prime for turtle nesting. Unfortunately, getting there and back poses major risks to not only the life of that turtle, but all the potential lives they carry. Turtle survivorship has high stakes because it takes 10-15 years for turtles to even reach sexual maturity which means if they do not make it to that age, they have not even replaced themselves in the population. Even if a turtle safely crosses the road, lays their eggs and makes it back, the eggs are so prone to predation. Given the human induced challenges they face (roadways) combined with their life history traits, it is no wonder that 7/8 Ontario turtle species are considered Species at Risk. To put things in perspective, most people don’t have to worry about hitting a window too hard, being born in a dangerous place, becoming trapped in a

swimming pool, having a foreign object stuck to your body that you are not able to remove, being kidnapped and held as a pet.

## How Can We Help?

- Asset mapping
- You are all *experts* on your local community, resources, culture and priorities for change
- What tools are at your disposal to help mitigate these problems?



Notes: Again, a human being is unlikely to find themselves with several McFlurry lids stuck around their necks which they are unable to self-remove. Therefore, we must be more conscious of our actions and how they can affect urban wildlife. Asset mapping makes the students look at themselves as the solution, we are not the ones with all the answers. You can even draw on a board at this point with the centre just being “how can we help?” branch out into categories like “in my everyday life” – secure garbage, inform others, become involved in community clean ups. Go deeper. Can you write letters to local city counsellors? Can you partner with local groups? Choose to live more responsibly and encourage others to do the same by becoming a leader? Are there scientific solutions to some of these problems? What about natural resource management?

## Careers in Wildlife Rehabilitation and Rescue

- Wildlife Rescue Team
- Wildlife Emergency Hotline Operator
- Wildlife Rehabilitation Staff



Notes: Explain the roles of the people in each department, how they contribute to the organization and how the kids may seek out to become involved as a career path or volunteer (once they are 18). Also mention other career options they could use to maybe one day “have a seat at the table” or have an influence in situations we discussed. Could actually aim to become part of local government, be a policy advisor, a scientist, work with a non-government organization like Environmental Defence (as well as Toronto Wildlife Centre, FLAP).



Thank you!

For more information visit [torontowildlifecentre.com](http://torontowildlifecentre.com)

Notes: Thank you for listening and exploring together the problems that our cities wildlife faces on a daily basis and what we can do to limit this! We encourage you to go forth and share what you have learned today, even with one other person. If we all work together in a conscious effort to coexist with urban wildlife and act as the voice for animals that cannot stand up for themselves, we can accomplish a tremendous amount.

#### **4. Collection of Published Educational Blog Posts**

A component of my purpose and objectives while creating this major project portfolio was to create resources for those that are interested in learning more about urban ecology, wildlife species and the common issues they face. While working with Wild Birds Unlimited, part of my role as Social Media Specialist is to contribute to their Nature Notes Blog. In becoming a bi-weekly contributor to this blog I was able to create educational content to reach a broader audience. In having this content published, it will remain available online as an educational resource for anyone who wishes to access the information. The intended audience of these posts is firstly Wild Birds Unlimited customers and followers, who are individuals who already associate themselves with a nature shop and may have a greater interest in learning about wildlife and the environment. Cultivating that care by providing accessible information and



simple ways to interact more peacefully with wildlife can foster more positive interactions with wildlife. Further, these posts were widely shared by me, Wild Birds Unlimited followers, coworkers and family members. The Facebook share of the blog on Wild Birds Unlimited page usually reached nearly 2,000 people and was shared to multiple individuals' personal pages. This underlines the need for wildlife education via social media platforms where engagement rates can be quite high and there is a vast amount of information and article sharing. When joining the team, I was clear that my goal was to make the Nature Notes Blog a go-to for people to engage with information and accessible wildlife education. The site has moved up 100 spots on the list of Top 1000 Birding Website (<http://www.birdingtop500.com>) since I became a contributor. This list is ranked by traffic to the website, which has continuously grown.

The time of the year that certain information is shared is also important. For instance, during May and June it is turtle nesting season in Ontario and the rate of road mortalities of turtle species greatly increases. To address this, my blog post about Ontario Turtles and how to help them across roadways was published and shared mid-May when the information would be most useful to the audience it was reaching. Topics covered consist of some of the most commonly occurring instances of conflict in the GTA including the effect of domestic cats on wild bird populations, migratory birds and window collisions and common wildlife myths.

#### **4.1 Domestic Cats and Wild Birds**

##### **Caring for Our Cats and Wild Birds**

<https://naturenotesblog.blogspot.com/2019/02/caring-for-our-cats-and-wild-birds.html>

At Wild Birds Unlimited, we are cat lovers. And many of us today will be celebrating National Love Your Pet Day as proud owners of our own domestic cats. As bird lovers and backyard bird watchers, we also have a great love for wildlife and thrive on the well-being of the biodiversity found in our own backyards.



Northern Cardinal (*Cardinalis cardinalis*) at a backyard feeder

We wish to celebrate the positive additions that both cats and wild birds make to our lives. Keeping cats indoors is safer for our domestic companions and safer for wild animals, including birds. Unfortunately, cats that roam free outdoors can become exposed to a number of threats including disease, vehicle collisions and run-ins with other cats and predatory wildlife. [Humane Canada](#) is one of many organizations that urges that our cats should be kept indoors for their own well-being when they cannot be supervised. As a result of outdoor dangers, free-roaming cats have considerably lower lifespans than indoor cats. We believe that cats deserve the same level of care we give to our other pets and should not be introduced to an ecosystem to which they are not adapted.

Free-roaming domestic cats face many threats, but they also create a huge threat to other wildlife. It is not their fault that they prey on other animals such as songbirds. However, cats are not a natural part of our ecosystems and in being introduced become both predator and prey. Although it is a difficult statistic to calculate, it is estimated that domestic cats kill 97-325 million birds annually in North America. Unlike native predators, such as raccoons or skunks, domestic cats are likely to kill birds whether they intend on consuming them or not. Domestic cats differ from natural predators in drastic ways which amplify their effects on wildlife populations. Predators in nature tend to be rarer in comparison to prey populations and naturally decline with prey populations, which does not ring true with domestic cat populations that are maintained at high levels through pet ownership.

For the sake of our beloved cats, birds and all other wildlife, we need to change how we care for our treasured companions. We can improve the well-being of our domestic cats and wildlife simultaneously! The "[keep animals safe](#)" initiative is supported by domestic pet and wildlife organizations alike such as the Ontario Wildlife Federation, Toronto Cat Rescue, and Ontario SPCA.

Healthy Alternatives



A furry friend "bird watching" from a catio

Cats can be kept safely indoors or enjoy the outdoors in a monitored way such as on-leash with their owners or in an outdoor catio, an outdoor fenced patio for your feline friend. [Habitat Haven](#) is a great Ontario-based company that provides enclosures for our pets to enjoy a "happy and worry-free outdoor enjoyment" and serve as an amazing alternative, or compromise, to allowing cats to free-roam. You can also get creative and make one of your own design! If a cat has never been outdoors, it is easy to entertain them by providing ample stimulation. A window perch, cat furniture, scratching posts and toys are all great ways to have [safe, happy cats](#).



As bird lovers and cat lovers, we want to create backyard environments that allow us to enjoy the love of our feline friends while allowing our backyard birds to thrive. We picture backyards with beautiful catios and bird-feeding setups, where all animals are safe. On this year's National Love Your Pet Day we want to pledge to continue to create safe spaces for our pets and for our wildlife!

Warmly,

Heather

## **4.2 The Value of Nature for Mental Health**

### **Turn to the Birds**

<https://naturenotesblog.blogspot.com/2019/03/turn-to-birds-in-literature-such-as.html#more>

In literature such as *Last Child in the Woods* by Richard Louv, there are strong connections made between exposure to nature and well-being. Here, at Wild Birds Unlimited we all channel the positive energy that comes along with watching birds near your home. There are positive mental health benefits associated with seeing wild birds. Science has confirmed that having birds around your home can act as a sort of preventative health care, creating happier places to live. Check out [this study](#).

So, we just wanted to remind you, to *turn to the birds*.



Black-capped Chickadee (*Poecile atricapillus*)

doesn't this image just make you swell with joy?

In this study, common types of birds including blackbirds, robins and blue tits were seen. But the correlation was not about the *kinds* of birds, but the *number* of birds seen from the home. More birds were associated with lower levels of stress, anxiety, and depression.

There are many ways that watching birds can increase your well-being:

1. Appreciation for Nature
2. Patience
3. Sense of Community
4. Acceptance
5. Increased Awareness
6. Daily Learning

Watching birds come to your backyard feeders fosters an appreciation for nature while instilling the virtue of patience, as different visitors come and go. There is an amazing community surrounding backyard bird watching (welcome to it!). Backyard bird watching helps you learn acceptance, watching the birds with no control, just passive enjoyment. You become so alert to your feeder set-up and new visitors. It creates opportunities for learning every single day! As much as you do not need to be able to identify birds to enjoy them, it is always exciting to witness a new species and run to grab your identification book! So whether it is catching a glance of birds feeding while you are doing chores, or taking your morning to settle in with a coffee and watch - take solace in the fact that watching the birds is increasing your well-being, while providing food sources for Ontario nature! Increase your backyard biodiversity and feel yourself thrive!

*Warmly,*

*Heather*

#### **4.3 Baby Birds and Avian Life Stages**

##### **Spring Brings New Life .. and Baby Birds**

<https://naturenotesblog.blogspot.com/2019/03/spring-brings-new-life.html>



Mother American Robin feeding mealworm to baby robin

We wanted to talk *baby birds*, because whether it feels like it quite yet or not, yesterday was the first day of Spring!! Spring always signifies so much new life, excitement, and joy. If you have backyard bird feeders, there is a good chance you may have birds' nest on your property. So, we are going to give a bit of information on what to expect from the life cycle of a baby bird.

Firstly, if you have not already- scramble to get nesting boxes out there! Our nest boxes provide a prime nesting experience for many backyard birds in Ontario by allowing proper drainage and ventilation along with a two-way opening. Witnessing birds raising their young is a mesmerizing experience and learning opportunity for people of all ages.

Most Ontario backyard birds are *altricial*, which put simply means that when the baby birds are hatched or born, they are underdeveloped and require care and feeding from their parents. Referred to as *hatchlings* when they crack through their eggs, they become down covered



*nestlings* who rely on their parents for protection and food. Once they begin to grow feathers, as juveniles they are referred to as *fledglings*. During their time as fledglings, they are working on building flight muscles and growing flight feathers. Once they are able to fly on their own they will leave the nest area entirely!

Often, fledglings are mistaken for injured adult birds as they can look quite similar and are seen on the ground, making attempts at flight.

Here is a helpful graphic to help you distinguish between hatchlings, nestlings, and fledglings and what to do if you find one out of its nest:



Birds can be quite amazing parents! And it is breathtaking to watch them raise their young

We hope that Spring brings heaps of new life to your own backyards.

Warmly,

Heather

#### **4.4 Migratory Birds and Window Collisions**

##### **Avian April**

<https://naturenotesblog.blogspot.com/2019/04/avian-april-april-is-exciting-month-in.html>

April is an exciting month in the bird community as we can see spring migration of many species! There is so much anticipation and excitement and every glance out your window could provide opportunities for rewarding new bird encounters. Be alert and keep watching! Birds time the spring migration north with the opening of new leaves on trees and the available feast of increasing insect populations. More daylight hours mean more time for eating insects!



### Ruby-throated Hummingbirds make long migratory journeys

Migration is a fascinating topic and one of interest for anyone that likes a good mystery! Of course, we know a lot about avian migration due to bird banding stations and increases in technology. However, there is still a lot that remains unknown and knowledge gaps surrounding species, including what paths they take when they migrate and where they spend their non-breeding time. We are even unsure as to why certain species don't migrate at all despite being closely related to ones that do.

However, exploring the knowledge base we do have can be quite interesting!

Check out this interactive bird migration map by [National Geographic](#)

The Fatal Light Awareness Program (FLAP) has a real-time tracker of bird migration that can alert you to the intensity of birds flying through your region! You can visit it [here](#). Their website contains a breadth of information about safe-guarding migratory birds and how you can become involved.

If we think about the number of man-made hazards and natural events that migrating birds encounter it makes their successful journeys seem even more miraculous!

Of course, watching birds beats researching them any day. So look outside and warmly welcome all our long-distance champions!

Feel free to come into the store and get some nutritious food for them to refuel after such a long journey.

Warmly,

Heather

#### **4.5 Endangered Species and Citizen Science**

##### **Every Day is a Good Day to Talk about Birds**

<https://naturenotesblog.blogspot.com/2019/04/every-day-is-good-day-to-talk-about.html>

This upcoming week, on April 22<sup>nd</sup> is Earth Day. And although every day is an “earth day” of sorts, this particular day is dedicated to recognizing and celebrating our environment and its protection. Earth Day 2019 is dedicated to Protecting Our Species. You can see details about the campaign [here](#).

We wanted to take this chance to highlight birds, of course. There are over 40 species of birds in Ontario that are listed as endangered, threatened or of special concern. You can see the full list [here](#).





### Piping Plovers are listed as Endangered in Ontario

Birds are considered an “indicator species” which means that if birds are thriving, that generally means that the habitats they occupy are as well. Thankfully there are many organizations that spread awareness and lobby for policies that benefit birds and bird habitat, such as [FLAP Canada](#).

You can help birds too! Making your yard a bird oasis of sorts can help provide birds with their basic needs such as clean water, plants with flowers for nectar and insects, fruit-bearing plants and suet to provide fuel for winter migration, layers of plants for cover and protection and nesting habitat and materials. Many of our foods provide optimal nutrition and are developed specifically for birds found in our area!

Further, you can become a scientist- easily! Observing birds in your own yard can contribute hugely to scientific endeavors asking the big and small questions about bird lives. This includes migration routes and effects of climate change. You can join the [Great Backyard Bird Count](#)

yearly. You can also use [EBird](#) which allows you to share your sightings and explore birds and hotspots near you!

So, as we approach Earth Day 2019, we invite you to think of all you are already doing to help bird species in Ontario and all the new ways you can help in Protecting Our Species.

Warmly,

Heather

#### **4.6 Warbler Migration**

##### **Warblers in May**

<https://naturenotesblog.blogspot.com/2019/05/warblers-in-may-warblers-represent.html#more>

Warblers represent a group of perching songbirds that share some general characteristics such as being small, vocal and insectivorous birds. Warblers can be very exciting for bird watchers alike during migration season! Warbler migration will peak early to mid-month and over 30 species will flood through the region. And although they are not typically attracted to seed feeders, you can use our suet products, mealworms and water to draw them to your backyard as they pass through! This way you can easily enjoy the migration spectacle without having to go out and look for them.



Black-throated Blue Warbler (*Setophaga caerulescens*)

Because there are so many different species of warblers that you may see, it is helpful to have an easy way to identify them on hand such as [this resource](#) by the Cornell Lab of Ornithology.

You can also contribute to citizen science by reporting sightings in your area using programs like [eBird](#). Citizen science is crucial in tracking bird species and contributes to their protection. There are a few species of warblers in Ontario that can use some extra help including the Canada Warbler which is of Special Concern, the Cerulean Warbler which is listed as Threatened, the Golden-Winged Warbler which is of Special Concern, the Kirtland's Warbler which is listed as Endangered and the Prothonotary Warbler which is listed as Endangered in Ontario.



Kirtland Warbler, Endangered in Ontario





Canada Warbler, Special Concern in Ontario

So, keep your eyes and ears open for these beautiful birds that will be coming through! You can also use resources found on [allaboutbirds.org](http://allaboutbirds.org) to listen to the songs of each individual species and learn more about them, such as this page on [Canada Warblers](#).

We can't wait to see warblers come through our region and hope that you continue to enjoy all that comes along with spring migration. We are always thrilled to see any photos you capture!

Warmly,

Heather

#### **4.7 Guide to Ontario Turtles and How to Help Them**

##### **Ontario Turtles: Why They Cross the Road and How to Help**

<https://naturenotesblog.blogspot.com/2019/05/ontario-turtles-why-they-cross-road-and.html#more>

Late May and early June represent an important time of the year for turtles in Ontario, as it is the peak of nesting season. This means that they leave the safety of the wetlands, creeks, and rivers that they call home in search of appropriate nesting sites. In Southern Ontario, no area of land is further than 1.5 km from a roadway which means that this can be a dangerous time for the turtles and the eggs they plan to lay.

Turtles are slow to reach sexual maturity and only have the chance to lay eggs once a year, with those eggs facing ample threat from predation. Losing just one mature adult can significantly impact a population. Ontario has eight species of turtles, until last year the Midland Painted Turtle was the only species to not yet be listed as a species at risk. However, in 2018 the Committee of Endangered Wildlife in Canada (COSEWIC) designated the species as Special Concern, making it so that all 8 species of Ontario turtles are considered a species at risk.



Midland Painted Turtle, designated by COSEWIC

in 2018 as a species of

Special Concern

The species of Ontario turtles and their statuses are as follows:

- 1) Blanding's Turtle, listed as Threatened
- 2) Eastern Box Turtle, listed as Extirpated (considered to no longer exist in Ontario)
- 3) Eastern Musk Turtle, listed as a species of Special Concern
- 4) Northern Map Turtle, listed as a species of Special Concern
- 5) Snapping Turtle, listed as a species of Special Concern
- 6) Spiny Softshell Turtles, listed as Endangered
- 7) Spotted Turtles, listed as Endangered
- 8) Wood Turtles, listed as Endangered
- 9) Midland Painted Turtle, listed as a species of Special Concern

Reptiles, including turtles, account for a large portion of the wildlife killed on Ontario roads annually. Turtles in particular often lay their eggs on the soft substrate found roadside making it more likely for them to be struck while crossing.

But you can help!!

Concerned citizens and wildlife lovers alike can help make sure that Ontario's turtles can safely lay their eggs and make it back to their respective homes. Simply driving with caution during this time of year and paying particular attention to wildlife crossings is important. Further, if you see a turtle on a roadway you can help it across. It is *very* important that you always help a turtle across *in the direction that they were traveling*. They know where they are heading and if you turn them around they will simply cross the roadway again.

This graphic is helpful if you happen to find a turtle crossing the road:



## Found a Turtle Crossing the Road?

### Why is it crossing?

Here are a few possible reasons:

To find a mate.

Hiya cutie.



To reach a good spot to lay eggs.  
(mostly spring & summer)



To spread to new habitats.

Aha!



### Why should you help?

To save that individual turtle.

Thanks friend.



To save species.

Most eggs and hatchlings get eaten. For populations to thrive, turtles must live a long time & lay many eggs.



Bragging rights.



### What should you do?

Stay safe. NEVER EVER put yourself in danger.

Let the turtle cross if it can do so safely.

Don't turn it back. It'll try to cross again!



If you must move it, lift by the back of the shell—never by the tail.



Don't move it to a new area.

It may roam aimlessly or try to return to its home area.



### CAUTION: Some turtles need special treatment.

Snapping and Softshell Turtles can be defensive & extra bitey.



Use a stick or other long object to push the turtle along.



Or, hold a hind leg, support the tummy, and help it cross.



**EXTRA CREDIT:** Tell land managers & policymakers that you don't want roads near wetlands. Support the installation of culverts & fences where needed.

BirdAndMoon.com and AlongsideWildlifeFoundation.org

To summarize some helpful tips:

- always help turtles in the direction they were traveling
- if it is a Snapping Turtle or Softshell turtle, they can be defensive on land as they are vulnerable so approach with caution
- You can get a Snapping Turtle to grab onto a sweater or stick and gently lead them across. The best method is the "wheelbarrow". Snapping Turtles can reach back to their hind legs so you want to only touch them in the area between their hind legs at the back of their shell. You can put your hands on either side of the tail and gently lift the hind end only and slowly walk them across the road in a wheelbarrow fashion
- Never risk your personal safety and be mindful of traffic on roadways
- Never lift a turtle by their tail

If you find an injured turtle that has already been struck you can refer to this [Ontario Turtle](#) page on how to get it to help. It is important to note that even if the female that has been struck may not live, the eggs she is carrying can be saved and incubated at a care facility so that the young will have a chance. Although the Turtle Centre is based in Peterborough, they have over 30 Turtle Response Centres across Ontario at their disposal, from which they can organize a transfer to their hospital. Also, CBC recently released a short documentary about the Turtle Centre, which highlights the process of rehabilitating turtles, how eggs are incubated and monitored and the resilience of turtles! You can watch it [here](#) and learn even more about turtles in Ontario and their rehabilitation.

You can also submit turtle sightings to the [Ontario Reptile and Amphibian Atlas](#). Scientists use this data to help monitor turtle populations and develop conservation strategies based on this information.

If you want to learn more about Reptiles and Amphibians in Ontario, a great place to visit for the entire family is [Scales Nature Park](#) in Orillia. They also run the START (Saving Turtles at Risk Today) project aimed at improving turtle conservation.

Turtles are a precious part of our ecosystems here in Ontario and we can all take steps, particularly this time of year to help them thrive.

*Happy Nesting Season!*

Warmly,

Heather

#### **4.8 Ducklings and Goslings: Telling the Difference and Feeding Waterfowl**

##### **Ducklings and Goslings: The Season for Young Water birds**

In our region, May and June are a busy time of the year for young wildlife of all kinds. There are many clutches of young ducks (ducklings) and young geese (goslings) running around. Together we are going to explore the difference between goslings and ducklings, besides the obvious, how to know if they need our help and how you can safely feed water birds.

##### Goslings

Gosling is a term that refers to young Canada Geese. Goslings are *precocial* babies, which simply means that soon after hatching they are able to walk around, swim and eat on their own. However, they do still need the guidance of their parents, to keep them warm, protect them from predation and teach them how to be a goose!

Goslings are raised by both parents, and Geese pairs can often be seen this time of year with a trail of goslings following behind them.





Eight goslings with a parent

Geese can often be seen nesting in what we would consider "silly" areas such as parking lots. It is important to note that they choose these locations because they are wide open spaces where they can see predators approaching. During nesting, mom will sit on the eggs for 25-28 days. During this time the male goose will be seen foraging around the area, and fiercely defending his partner and their clutch! If you have ever been hissed at by a goose- they are just being good dads! Interestingly, first-time dads tend to be more fierce than seasoned fathers who are a little more laid back (*maybe we aren't so different after all*).

Goslings should always be in the vicinity of their parents. A gosling found alone can be assumed orphaned. If you find a gosling by itself or one that you believe to be injured please see [this page](#) on how to proceed.



Geese are great parents and will actually adopt young that are not their own. Goslings are incredibly sweet and a joy to watch with their family units!

## Ducklings

Duckling is the term used to refer to a young duck. Ducklings are also *precocial* babies and can eat, walk and swim directly after hatching. However, they do rely on parental support for warmth, protection, and guidance. Unlike geese, male ducks play no role in raising the young. You will see a female duck with a trail of ducklings behind her. Ducks tend to nest as close as possible to a water source. Occasionally they mistake people's pools for a viable water source- if you have ducks nesting in your yard and fear that they may go into your pool, see [this page](#) on what to do.

Ducklings should also always be in the vicinity of their mother. If a duckling is found completely alone, they need help. Again if you find one alone or believe it to be harmed see [this page](#). Duck families, unlike geese, do not generally take on young that are not their own.

When they are young, goslings and ducklings can be difficult to tell apart as they can both appear as a combination of yellow and brown. In this photo of a duckling, you can see a brown stripe that extends past *both* sides of the eye, which is a tell-tale sign that you are looking at a duckling. Goslings often have this stripe, but it only extends backwards from the eye.



a young Duckling

One of the most common species of ducks you will see in our region is Mallards. The female is a drab brown but has a distinctive purple marking on its wings.

Both goslings and ducklings are very impressionable, and it is important to keep a good distance when observing them. They are terribly cute but accommodate to humans pretty quickly! If you wish to put out feed for ducks and geese it is best to offer something like cracked corn, seedless grapes cut up, cooked rice, peas, oats, and chopped lettuce. Foods such as bread are not

nutritionally sound for them and can actually lead to injury such as crop impaction! Crops are the initial place for digestion in birds. Further, rotting bread can actually act as a pollutant in our waterways and lead to excess surface algae that can harm fish.

If you take a stroll along a lakeshore or river, you are likely to see a goose or duck family this time of year! It is really quite something to watch. Enjoy all the marvel that this time of year has to offer - and the fluffy little goslings and ducklings learning their way in the world.

Warmly,

Heather

#### **4.9 Plastic Pollution and Wildlife**

##### **Protect Birds by Being the Solution to Plastic Pollution**

Last month we celebrated World Migratory Bird Day (May 11th). This year's theme was Protect Birds: Be the Solution to Plastic Pollution. We wanted to take the time to explore this topic a little more deeply. Plastic pollution poses risks to wildlife on a global scale, with heavily impacted species ranging from whales, fish, turtles, and birds. On the official [World Migratory Bird Day website](#), they quote:

*“One third of global plastic production is non-recyclable and at least eight million tonnes of plastic flows unabated into our oceans and water bodies each year,” Joyce Msuya, Acting Executive Director of UN Environment said. “It is ending up in the stomachs of birds, fish, whales, and in our soil and water. The world is choking on plastic and so too are our birds on which so much life on earth depends.”*

There are 3 major ways that plastic pollution affects birds:

- 1) Entanglement in plastics and fishing gear
- 2) Ingestion of plastic waste
- 3) Using plastic as nesting material which can injure and trap young birds

Entanglement in plastics, specifically fishing gear is common in our area. Fishing gear such as lines and hooks are too often discarded at rivers and lakes where waterfowl quickly become entangled and unable to free themselves. The consequences can be dire.



Trumpeter Swans were once extirpated from Ontario and due to conservation and reintroduction efforts have made a comeback but are still heavily monitored. Swans are often the victim of fishing gear entanglement and as they try to preen a hook out of their feathers often their bill comes entangled too



Ingestion of plastic waste has become a serious issue. This is more prevalent for water birds but can affect all birds. Ingesting plastic can kill them, lead to severe injury or create a false sense of fullness which can lead to starvation or malnutrition.

We can: Be the Solution to Plastic Pollution!

**The simple solution:** make sure to always pick up after yourself, especially when using fishing gear on our waterways, remembering that we are not the only ones that use the water and such a simple act can save an animal from a lot of hardship!

Further, birds collect a wide range of materials to build their nests. As the volume of plastic pollution increases, so does the amount of plastic that ends up being used as nesting material. This creates hazards for fragile, newborn birds and can lead to extreme harm and fatality as they develop in the nest.

**The simple solution:** to help ensure that fewer birds ingest plastic and end up using it as nesting material, the only solution is to *use less plastic* and therefore cease to contribute to the problem. We have already begun to see a shift in governments pushed by consumer desires to use less plastic. Efforts to phase out single-use plastics and make plastic products more recyclable are underway in a wide variety of cities and countries worldwide.

Every single person can make an effort to reduce their use of single-use plastics, which ends up pushing governments and companies to follow consumer trends. So let's send the message: *we want less plastic*.

Whenever I think of using a single-use plastic I think to myself, this will exist *somewhere, forever*. Long after it has been useful for me it will find its way into our ecosystems and harm another being. This small shift in mindset can be really helpful in reforming day-to-day habits. There are simple swaps we can make in our everyday life to use less plastic!

**Starter List for Using Less Plastic:**

1. Say no to straws! You can opt out of using a straw entirely or keep alternatives on hand such as metal or [bamboo straws](#). WBU Barrie carries stainless steel straws and brushes and they can also be easily found at a variety of other retailers.



Stainless Steel Straw, Brush and Bag Available at WBU Barrie

2. Get a bamboo toothbrush - toothbrushes are actually one of the biggest plastic pollutants out there as we only use them for a short period of time before discarding them. [Bamboo alternatives](#) are biodegradable!
3. Swap your household plastic wrap for beeswax wraps! [WBU Barrie sells Abeego](#) beeswax wraps and plastic wrap alternative. Beeswax keeps food fresh, masks bad odors, smells great and is easy to clean.



Abeego Beeswax Food Wrap Available at WBU Barrie

4. Ditch plastic water bottles - there are so many reliable and aesthetically pleasing reusable water bottles on the market that plastic bottles are completely unnecessary
5. Swap plastic grocery bags for reusable bags - this one is easy and we have seen a huge societal shift to the use of reusable bags. To go a step further you can order reusable produce bags as well to take the plastic out of your weekly grocery haul.



#### WBU Barrie Reusable Shopping Bag

By taking these 5 easy steps you will effectively be reducing your personal plastic footprint significantly. In turn, you will be helping many species of birds and other wildlife live a more plastic-free life alongside you.

Warmly,

Heather

#### **4.10 Common Wildlife Myths**

##### **Myth-busters: Wildlife Edition**

There are many common myths about wildlife that many accept as fact simply for just never being told otherwise! So, I am going to explore and bust some common wildlife myths.



## 1. Animals that are touched by human beings will be abandoned by their parents



Baby House Finch

**Busted:** this is very untrue! Often people use this reasoning when it comes to birds and whether or not you can pick up a baby and put it back in its nest. That is absolutely okay! *Most birds can't even smell.* It is best that you always keep your distance with wild animals, but this will not make a wildlife parent abandon their child! So many species (raccoons, squirrels, birds) are actually amazing parents and just want their baby to be safe and with them!

## 2. Running into a skunk means you will get sprayed

**Busted:** Skunks use spraying as a last resort! Once they spray they are left defenseless until their musk can replenish. The real problem with skunks is that they have very poor eyesight! They often don't see you coming until you are too close for comfort. But several warning signs before

they will resort to spraying include: stomping their feet, backing up, raising their tail. If they feel they are still in danger after this, then they will resort to spraying.

Your best bet if you know a skunk den is nearby or smell one outside is to talk out loud! A simple "Hey Skunk, I'm coming outside now" gives them a fair warning to move away and they will not be so startled.

### 3. A Snapping Turtle can bite off my fingers or toes



Snapping Turtles have lots of fleshy parts that are exposed when they are on land and they cannot go inside their shells like other turtles, snapping is their defense mechanism

**Busted:** human jaw strength is actually double that of a snapping turtle! Turtles do not even have teeth but rather beaks. Surely it will hurt but you will be okay. A general suggestion is just to never put your fingers near a snapping turtles face. In terms of being worried about them getting

your toes while you are swimming- also completely false! Snapping turtles only snap on land because they feel vulnerable, they cannot go inside their shells like other turtles, so it is their defense mechanism as they are slower moving on land. However, the water is their domain and they have no natural predators in our lakes. They are more likely to swim in the opposite direction than bother you in the least. Further, Snapping Turtles are scavengers and therefore - lazy hunters! I promise they are not on the prowl for your toes.

#### 4. Snakes are poisonous and/or slimy

**Busted:** snakes are most certainly not slimy, their scales are actually made of keratin, like human fingernails. That means they are even less slimy than human beings as they have no oils on their "skin". Further, there is only one venomous (not poisonous- venom is injected, poison is ingested) snake in Ontario, the Massasauga rattlesnake. Even so, the odds of side effects are minimal and only 2 people in Ontario have died from a bite in history- one of which did not seek any medical treatment. Other snakes such as the (very cute) Hognose snake impersonates the Massasauga to avoid predation.

#### 5. Touching a toad will give you warts





**Busted:** the "warts" you see on toads actually are there to secrete a bitter, sticky fluid that acts as a deterrent for predators. In no way does it put you at risk of getting warts!

6. My pet turtle can survive outside

**Busted:** turtles are a *very* long-term pet and sometimes it seems easier to just release them into the wild. However, most pet turtles are Red-eared Sliders, a species of turtle that is not native to Ontario and are not adapted to survive our winters. In some warmer areas, released (and invasive) Red-eared Sliders have survived the winter and are competing with native turtles. This is also a problem as an introduced species is in some cases displacing a native species. It is best to just consider that a turtle can live an extremely long life (40+ years) and Red Eared Sliders can become the size of a dinner plate, before getting one. Are you going to want to care for that animal in another 40 years?

7. A baby animal found alone has been abandoned by its parents



**Busted:** Many species choose to leave their young in safe places so that they will not draw predator attention to them. This is particularly true for prey species such as rabbits or deer. Mother Eastern Cottontail rabbits will leave their young in the nest and only return about 2 times daily to feed for a short period of time. Deer often leave fawns in tall grass for hours at a time and will return to collect them later. As baby skunks develop, they may be seen adventuring and playing nearby the den during the day while mom is sleeping. Before assuming that any animal has been orphaned, watch for some time and see if a parent is visiting! Again, most of these species are amazing parents and will always come back to their young.

Something these myths all tend to have in common is that they paint our interactions with wildlife with a negative brush and cultivate fear when we think of these animals! When in reality, they are not out to get us - and vice versa! Most animals, of course, have defense mechanisms to keep themselves safe in dire circumstances but need to be provoked to elicit them. Always give wildlife the space they deserve, and we can peacefully coexist. In Ontario, these are all species that you could find in our own backyard on a daily basis.

By understanding our differences, we can celebrate them. That is all for today on this round of MythBusters: Wildlife Edition.

Warmly,

Heather

## 5. Formal Letter Re: Public Consultation on Draft Biodiversity Strategy

Toronto City Hall  
100 Queen Street West  
Toronto, ON M5H 2N2  
March 1, 2019

Dear Jennifer McKevie,  
Re: Public Consultation on Draft Biodiversity Strategy

I am contacting you as a concerned citizen. This letter represents my thoughts and research pertaining to the Draft Biodiversity Strategy. I am a Masters of Environmental Studies graduate student at York University, dedicating my graduate work to understanding human-wildlife conflict in urban areas, specifically Toronto and the Greater Toronto Area. Through my involvement with Toronto wildlife organizations and academic discourse I have become very aware of the instances of conflict between humans and wildlife that exist within the city and the lack of resources dedicated to mitigating them. I want to address how this biodiversity strategy has the potential to be extremely problematic for both wildlife and the people that live within the city.

Human-wildlife conflict occurs when wildlife requirements overlap with human populations, creating costs for both groups (Mardaraj & Sethy, 2015). Driving forces such as human population growth, species habitat loss, urbanization, degradation and fragmentation have led to increased instances of HWC. Human-induced mortality affects populations but also has broad environmental impacts on ecosystem equilibriums and biodiversity (Mardaraj & Sethy, 2015). Anthropogenic threats are responsible for killing billions of wildlife annually, which can include collisions with man-made structures, predation by domestic pets, roadway collisions and poisoning (Loss, Will, & Marra, 2013). The draft Biodiversity Strategy is aimed at “making Toronto more wild” by increasing both the quantity and quality of natural habitat, designing built environments to be more biodiverse and have less impact on the natural environment and

increase access and awareness to nature in the city. However, the Strategy lacks the depth to tackle any of these goals with the necessary vigor to evade grave consequences to both people and wildlife. The Draft does not address how residents of Toronto are to safely and peacefully coexist with more wildlife that will be attracted to more biodiverse areas. Many people are not eco-informed and do not understand the behaviour of wild animals. Citizens do not know what to do when a red fox makes a den under their deck or if a bird hits their window and becomes injured. There is already a massive demand for help handling wildlife-related situations and providing care to wild animals that become sick, orphaned or injured due to human interactions within our city.

Currently, the only organization that people in Toronto can turn to for help with these situations is Toronto Wildlife Centre, which is a charity that runs off of public donations and is already unable to meet the current need from the community for help with these issues. The City of Toronto needs to consider the consequences that can come from inviting more wildlife into urban areas, both to people and to wildlife and then take a more comprehensive approach in developing a Strategy that provides resources for handling the challenges that will naturally arise when people and wildlife live side by side.

Education is a form of *conflict management* which can be defined as eliminating conflict by creating a resolution and reducing the negative impact of conflict by way of management (Redpath et al., 2013). A well-informed public may be the most important way to preserve native species and decrease instances of human-wildlife conflict (McKinney 2002). Individuals that live in urban environments often do have an appreciation for urban species, such as birds (Clergeau et al. 2001). However, potential opportunities for conservation and peaceful coexistence are often hindered by a lack of ecological knowledge. Education aims to build capacity for conflict resolution and increase public understanding of conflict situations and the consequences for both humans and wildlife (Mardaraj & Sethy, 2015). Increased public awareness and appreciation for the ecology and nature of conflicts can give insights towards potential solutions, as the reason for conflicts can be determined with basic appreciation and understanding of biological and ecological relationships (Messmer, 2000). The City of Toronto wants the Strategy to promote eco-literacy but has not actually stated how that will occur. Certainly, eco-literacy needs to be greatly increased to avoid ample negative consequences. However, simply providing green space

will not increase eco-literacy and there needs to be strategic plans put in place on how to educate the public and not only increase eco-literacy but wildlife tolerance. A failure to back this Biodiversity Strategy with stringent public education will result in amplified conflict situations and millions of people without resource to handle these situations appropriately or confidently.

Over time, urban development in the GTA has displaced many wild animals from natural habitats and as a result many species including raccoons, squirrels, geese, deer and coyotes have adapted to living closer to people. Wild animals have become a part of Toronto's landscape. This has greatly increased the frequency of interactions between humans and wildlife. These interactions are often viewed by the City of Toronto (2015) as having an adverse impact on public health, safety and private property. In the city of Toronto, the most frequent complaint with the greatest impact to the public are instances of property damage as well as disruption to garbage bins and compost, which can result in financial impacts for homeowners as they seek to displace the wildlife and repair damage (City of Toronto, 2015). Residents also raise safety concerns about proximity to coyotes in residential areas even though coyotes are rarely a threat to people, as only 2.4 people annually are scratched or bitten by coyotes in Canada compared to over 460,000 dog bites (CHIRPP, 2012). Although interactions between humans and wildlife are inevitable in urban spaces there are human behaviours that act as attractants and increase the risk for conflict such as intended or unintended feeding of wildlife (Don Carlos, Bright, Teel, & Vaske, 2009). Anthropogenic attractants include intentional bird feeding stations as well as overflowing or carelessly stored garbage, as well as properties that are not maintained or areas that can be used as dens such as decks and wood piles (Director & Licensing, 2015). With all the acknowledgement of wildlife attractants that are rampant within the city as well as the impacts of interaction on human health, safety and private property, plans need to be far more comprehensive in explaining how these interactions will be mitigated or addressed without the consequences being pushed onto other, charitable organizations.

In the City of Toronto, a residence of a Performing Lodge building in the Esplanade noted in 2015 that he is used to seeing ducks and geese nesting but not on a rooftop garden in downtown Toronto (Clarke, 2015). Wildlife centre officials have stated that the incidents of ducks and geese nesting in unsafe urban locations are increasing. Ducks and geese typically nest



in green spaces that are close to water, but when this happens to be a green roof on a high-rise building in downtown Toronto, there is no way for them to safely get to water. Although the intentions of Toronto's 2009 Green Roof Bylaw were to have a greener city with greater biodiversity, there is little research done into how they can negatively impact native species. This sets a prime example as to why a Biodiversity Strategy must be rooted in realism as opposed to idealism. We all romanticize the idea of a greener Toronto, and it is impossible to deny the positive impacts that increased green space has on human well-being. However, green roofs are meant to reduce storm water runoff, energy consumption, ambient temperature and cooling costs whilst making cities greener and creating potential for food production. Yet, a study in 2010 noted that little research has been done to understand the potential for providing nesting locations, specifically for normally ground-nesting species. It was noted that mallards breed on green roofs (Fernandez-Canero & Gonzalez-Redondo, 2010). Little research has gone into how bylaws requiring vegetated areas on building rooftops can heavily increase bird-on-roof problems (Clarke, 2015). This serves as an example of the potential consequences that can occur when we don't explore the complexity of an issue before tackling it and provide ample resource to mitigate consequence. Green roofs are often regarded very positively, but Toronto Wildlife Centre spends every spring dispatching rescue teams to different high-rise buildings throughout the city collecting ducklings and goslings to release to safe areas before they perish. We cannot move forward and be so careless as to not consider the complexity of introducing new habitat to an urban area.

Toronto Wildlife Centre handles approximately 30,000 calls every year and during the busy season (spring/summer) staff handle as many as 200 calls per day. Responses to these calls result in approximately 5,000 sick, injured and orphaned wild patients being admitted annually from over 270 different species. This includes the rescue team carrying out hundreds of complex and dangerous wildlife rescues that are too difficult for members of the public to do themselves (Toronto Wildlife Centre, 2018). After working as an Emergency Wildlife Hotline Operator at Toronto Wildlife Centre I saw first-hand how prevalent instances of human-wildlife conflict in are in the GTA. Further, in my conversations with callers I was often shocked by the lack of general knowledge about species that are common in urban environments and can be seen around us every day. Toronto Wildlife Centre rehabilitates wild animals who have been harmed by

human activity. Although this work is important and there are certainly more animals that need help than the charity alone can help, mitigating incidences of human-wildlife conflict needs to be targeted at the root cause. If more people have access to education about the animals they encounter on a day to day basis, animals and people alike would come into less harm.

Overall, human-wildlife conflicts are an integral part of wildlife management in urban ecosystems and therefore must be addressed. Enhancing biodiversity in urban environments can increase quality of life and the education of those that live in cities can facilitate the preservation of biodiversity in urban ecosystems (Savard, Clergeau, and Mennechez 2000).

Sincerely,

Heather Kerrison

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## 5.1 Correspondents

The above letter was sent to the following correspondents, including all 25 City of Toronto Councillors, the City Planner working on the Draft Strategy and the representatives for the public consultation group.

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## 6. Reflection and Integration of Various Components

During my program I became associated with and did Experiential Learning at Toronto Wildlife Centre. It was during this work that I realized that there are ample situations of human-wildlife conflict negatively affecting both people and wildlife in the city on a daily basis. A common denominator in these situations is often a lack of education or knowledge about the life history traits of various species. The general public often fails to understand why a young animal would ever be found alone or how their domestic cat can impact wildlife populations, just to name a few. This lack of knowledge contributes to escalating conflict in two ways: firstly, it increases the instances in which humans directly interfere with or harm wildlife whether they intend to or not, secondly it increases the likeliness that people will view normal wildlife behaviour (i.e.; a coyote going after a small mammal like a dog or cat) as malicious.

Toronto Wildlife Centre does incredible work as the only rehabilitation centre of its kind in the Greater Toronto Area and the busiest wildlife hospital in Canada. However, most of the animals being rescued, treated and rehabilitated are suffering from injuries or ailments that could have been avoided if the general public was aware of the consequences of their actions or how to coexist more peacefully with urban wildlife. Of course, in some cases people knowing the consequences of their actions does not mean behaviour change will follow. However, environmental education can be used as a tool to spark care about our ecosystems and the wild animals we share our spaces with, it can ignite passion and act as a call to action.

The work that I have completed for this project seeks to address human-wildlife conflict situations both before and after their occurrence. The “Bounce Back Fact Sheets” for Toronto Wildlife Centre will serve as valuable information for people who have already found themselves in a conflicting situation. This could be injured or orphaned wildlife or an animal nesting on their building or property. Toronto Wildlife Centre handles over 30,000 calls annually about sick, injured and orphaned wild animals, during the busy season (spring/summer) staff field as many as 200 calls per day. Unfortunately, during this busy time the staff is unable to respond to every call that comes into the centre. Therefore, the focus is placed on answering the calls about animals that can be helped, or the ones that the centre has space for. Wildlife

rehabilitators have standards of care and place limits on how many animals of each species can be admitted, taking into account parameters such as staffing and cage space. When there are species that the rehabilitation centre is already at capacity for, the telephone greeting will inform callers which animals the centre can no longer accept, or from which locations. For example, because raccoons are a rabies vector species and must be released within 1km of their origin location, only raccoons from within the city of Toronto are accepted. Nuisance-based calls are also not answered when there is a high volume of emergency calls that take precedence. These incidents are often humans conflicting with wildlife on their properties, due to these animals nesting on their decks or balconies etc. Because the animals in these situations are completely normal and healthy, they simply cannot be prioritized. However, not answering calls for all these various reasons leaves a lot of people in situations with wildlife and no idea how to get them help or to resolve the situation. The Bounce Back Sheets are made to be concise, fact-based information sheets that get across the information that would generally be given over the phone. They explain what normal behaviour for different species is, what is cause for concern, how to determine whether parents may still be around and where else they may seek to get help for the animal. Although these sheets are to be provided to people finding themselves already experiencing one of these issues, the information can be useful in analyzing or avoiding such situations in the future.

The remainder of the project is focused on pre-emptive education, aimed at giving people the knowledge and tools to avoid situations of conflict. The Wildlife Presentations for High School students cultivate asset-based learning to encourage students to use tools and skills they already possess to improve human-wildlife interactions in their communities. Students can be considered “experts” on their local conditions, resources, culture, values and priorities for change. By avoiding a deficit approach where students are seen lacking the knowledge that an educator can provide, we can create a relationship based on dialogue, partnership and facilitation (Garoutte & McCarthy-Gilmore, 2014). Asset-based learning works to help students understand the value of relationships amongst a community, and their individual role within this. Typical wildlife education programs tend to teach in a passive way that is not overly effective in knowledge transfer or attitude shifting (Sponarski, Vaske, Bath, & Loeffler, 2019). Using experiential learning has been shown to improve participants retention, attitudes and overall

knowledge. The objectives of wildlife or environmental education are: awareness, knowledge, attitudes, skills and action (Dettmann-Easler & Pease, 1999). An experiential learning cycle generates an experience for learners that achieves the learning objectives, creates and guides the learners through this experience and enables the learner to reflect and evaluate the experiences after the fact (Sponarski et al., 2019). The presentations cover a range of topics under the umbrella of human-wildlife conflict and wildlife education including the concept of urban ecosystems, the anatomy of wild animals, the consequences of our daily activities on those ecosystems and the animals that co-occupy them, current policies and laws that do or do not protect wildlife, organizations that provide help, how wildlife is viewed by various stakeholders and potential careers in wildlife rescue or conservation. By arming students with the knowledge about how wildlife is currently viewed and protected in their communities, and the conflicts that arise in urban areas, I hope to prepare them to think critically about what influence they can have in their communities and the wildlife they share them with.

The collection of Educational Blog Posts is also aimed at pre-emptive public education about species and situations that are commonplace in urban ecosystems. Throughout the completion of my major project work I became employed at Wild Birds Unlimited, a nature shop, as their Social Media Specialist. The role includes running an Instagram account (@wbubarrie) and contributing bi-weekly to a Natures Notes blog (<https://naturenotesblog.blogspot.com>). I sought to use this platform to create educational messaging about wildlife in a way that is accessible to all people. The topics that I covered included the impact of domestic cats on wild bird populations, the intrinsic value of nature for mental health, understanding avian life stages, migratory birds and window collisions, endangered species and the value of citizen science, an information guide of Ontario turtles and how to help them cross a roadway, ducklings and goslings and issues they may face, plastic pollution and its impact on wildlife and debunking common wildlife myths. All of the blogs are published online and have been shared through various channels such as Wild Birds Unlimited social media platforms as well as my personal accounts. The blog posts are all relatively short, easy to read and provide important information to understand pertaining to these subjects, that could better prepare individuals for interactions with wildlife. Further, they were published during the periods of time, when applicable, that these problems would be most common for

people to encounter. For example, bird migration and window collisions during April/May, Ontario Turtles and road crossings as well as ducklings and goslings at end of May/ early June. By being able to use these social media platforms to publish educational information I have been able to reach a greater amount of people with the messaging and background knowledge that is so important in moving toward human-wildlife coexistence.

The formal letter regarding the Public Consultation on the Draft Biodiversity Strategy was something that presented itself as overtly relevant to my research focus and I felt it pertinent to immerse myself in the process. On February 26<sup>th</sup>, 2019 I attended a public consultation meeting at the Scarborough Civic Centre from 6:00-8:30p.m. Toronto's first ever draft Biodiversity Strategy is aimed at making Toronto more wild, connected and diverse by increasing the quantity and quality of natural habitat within the city, designing built environments to be more biodiverse and increasing access to and awareness of nature (Planner, Director, & Planning Division, 2018). During the meeting I raised important questions to consider such as how the city could cope with the increased wildlife that will occupy these habitats or by what means the awareness of nature would be increased. Answers to these questions seemed unavailable and it was thought that simply having more green space will increase people's appreciation and awareness of nature and wild animals. Further, in the city of Toronto, Toronto Wildlife Centre is the only centre that provides a wildlife rescue team, a wildlife hospital and rehabilitation. This work is not publicly funded. I wanted to formally address the idealism of this strategy and areas where the city may seek to improve the viability of its implementation. Throughout the meeting I even found that other participants seemed to carry common sentiments about wild animals in our urban environments. There were comments made about not understanding why domestic cats would need to be kept indoors and how certain wildlife species are viewed as pests. This greatly underlined the need for wildlife education prior to inviting more wildlife into the city. The letter was sent to the City Planner heading the Draft Strategy as well as all members of Toronto City Council.

Throughout the course of my program and completion of this Major Research Project I have created and distributed educational tools and platforms that seek to mitigate instances of human-wildlife conflict in urban areas. Over this period of time I have become employed and



associated with Toronto Wildlife Centre where I have worked as a Wildlife Emergency Hotline Operator which aided me in gaining insight into how common instances of conflict are in urban environments and what those situations often look like. Toronto Wildlife Centre has an education and outreach program and I have worked closely with the manager of this department in developing both the Bounce Back Fact Sheets and the presentations for high school students. I also became employed at Wild Birds Unlimited as a Social Media Specialist where I have been able to use social media platforms to convey educational information about wildlife. This includes the blog posts as well as daily posting on the Instagram account. I will have concurrently completed an Environmental and Sustainability Education diploma alongside my graduate program. Exploring the issue of human-wildlife conflict in urban areas and how we can seek to mitigate instances of conflict with education has proved to be a worthwhile and expansive project.

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