



Urban Coyotes in Ontario, Canada Study Findings



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EXECUTIVE SUMMARY

Study aim

This research was undertaken in fulfillment of a PhD in Geography at Queen's University. It aimed to investigate experiences and contexts surrounding human-coyote interactions in urban areas to inform human-wildlife conflict mitigation strategies and contribute to Animal Geographies literature.

Methods

- Human dimensions were explored through: document review, semi-structured interviews with Key Informants & Participants, and participant observation with Coyote Watch Canada
- Coyote dimensions were explored through: secondary analyses of GPS collar data, field investigations, and trail cameras

Key findings

1. **Perceptions of coyotes:** communities hold both positive and negative views about coyotes
 - Negative views stemmed from exaggerated fears and misunderstandings of risk, and problematic 'coywolf' narratives
 - Positive views foreground that humans and urban sprawl are more often the problem, coyotes are important ecosystem service providers, and they do belong in urban areas
2. **The lives of coyotes**
 - Coyotes are highly adaptable and modify behaviours to survive in urban areas
 - Many populations are healthy, but mange is a concern; rehabilitation is an effective response
 - Misinterpretations of behaviours (e.g. aggression vs. food demand) has a significant impact on the lives of coyotes because it shapes how communities respond
3. **Key sources of conflict**
 - Feeding: intentional & accidental feeding of coyotes creates problematic interactions
 - Domestic dogs: coyotes see roaming dogs as a threat and may act defensively
 - Landscape changes: alter coyote movement patterns making them more visible
 - Misinformation & media sensationalism: exacerbate myths, fears, & conflict
 - Wildlife NIMBYism: some people value coyotes, but don't want them living nearby
4. **Paths to coexistence**
 - Education & changing the dialogue: is key to minimizing fears & creating tolerance
 - Aversion conditioning: is an effective way to reshape undesirable coyote behaviours
 - Public reporting: can identify hotspots & enable proactive response, but can create unrealistic expectations & misunderstandings of coyote numbers if publicly available
 - Partnerships: between various municipal agencies & community groups is key to creating protocols that can effectively coordinate proactive wildlife responses

Conclusions

- Communities are adjusting to the reality that coyotes are part of our urban ecologies
- By coordinating across agencies to implement proactive education & response strategies, communities are witnessing marked success in promoting human-coyote coexistence

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INTRODUCTION

With global urbanization people are increasingly living alongside wildlife in cities. One species that has garnered much attention in the last several decades in North America – from local governments, biologists, wildlife organizations, and in the media – is coyotes. As wildlife managers attempt to balance concerns surrounding human and companion animal safety and the public’s desire for humane wildlife management, more information is needed on human perceptions and experiences of living with coyotes, the lives of coyotes in urban areas, and opportunities and challenges for coexistence.

The aim of this research was to investigate experiences and contexts surrounding human-coyote interactions in urban areas to inform human-wildlife conflict mitigation strategies. It was undertaken as part of a doctoral thesis in Geography at Queen’s University, working with [The Lives of Animals Research Group](#). Research was undertaken collaboratively with the [Coyote Watch Canada](#) (CWC) Canid Response Team, and the Ontario Ministry of Natural Resources and Forestry (OMNRF) provided support in the form of trail cameras and GPS collar datasets. Research was funded by the Social Sciences and Humanities Research Council of Canada and a Queen’s University Arts ’49 Principal Wallace Fellowship. Academic outputs focus on [multispecies urban theory](#) and [best practices for wildlife management](#). This report provides an overview of findings on: community perceptions of coyotes; the lives of coyotes; sources of human-coyote conflict; and paths to coexistence. The full thesis can be viewed [here](#).

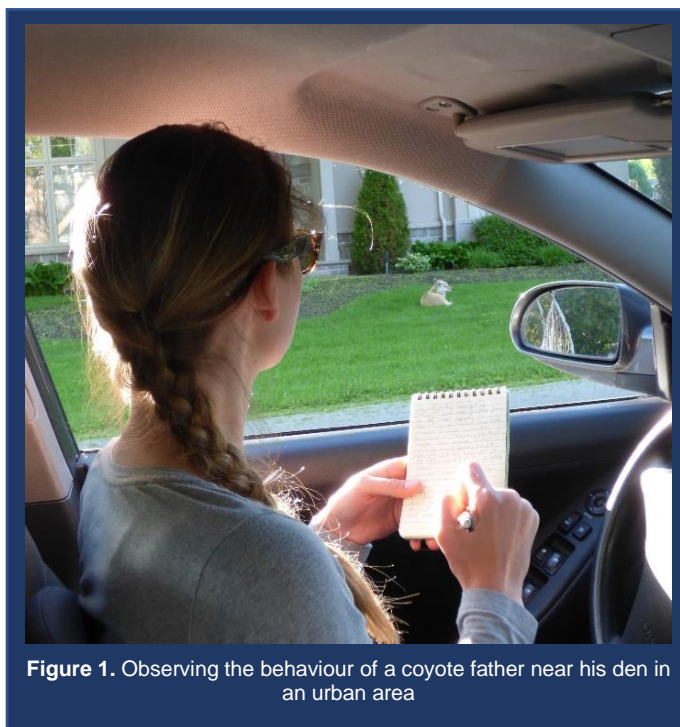


Figure 1. Observing the behaviour of a coyote father near his den in an urban area

METHODS

This research took a case study approach within three focal communities: Oakville, London, and Niagara Falls. Data collection combined social and natural science tools to investigate both human and coyote dimensions. Research was approved by the Queen’s General Research Ethics Board and Animal Care Committee. Data collection was opportunistic and did not proceed evenly across communities. Fieldwork and participant observation opportunities were varied, as were responses to inquiries and success in Key Informant and Participant recruitment. GPS collar data was only available within Oakville, and trail cameras met with most success there, having only very limited success in Niagara Falls, and failing to capture coyote activity in London.

Human data collection tools	Coyote data collection tools
<ul style="list-style-type: none"> - Document review of municipal & organizational publications, & news/social media within case study communities - Key Informant interviews (in person/by phone) with 18 individuals who had knowledge of urban coyotes in Ontario in a professional capacity¹ - Participant interviews (in person/by phone) with 13 individuals with personal experiences of coyotes within their communities - Participant observation with CWC's Canid Response Team, observing education & outreach activities (community meetings/presentations & training) and assisting in aversion conditioning & rescue efforts 	<ul style="list-style-type: none"> - GPS collar data provided by the OMNRF for 16 coyotes rehabilitated at Toronto Wildlife Centre (TWC) & released in the Greater Toronto Area - Field investigations in urban greenspaces to identify coyote habitat & travel routes, and provide qualitative data about the lives of coyotes - Trail cameras (motion activated 'camera traps') mounted in urban greenspaces with confirmed or suspected coyote activity

This study thus has a number of limitations. It was designed as a qualitative, intensive study, and the small sample size means that there are viewpoints which are poorly represented. The data are notably skewed as a result of self-selection bias. Interestingly, and contrary to what had been hypothesized, only two study Participants were more afraid or uncertain about coyotes, whereas the majority were, in the words of one participant, “neutral to favourable” (Robert, Oakville). A number of participants

noted that they were worried about the overrepresentation of negative views in my study, and thus wanted to participate so that there would be “a voice for the coyotes” (Jason, London). Though surprising, these findings provide a valuable counterpoint to the overrepresentation of negative views of coyotes within news and social media and public meetings. This study also did not explore the significance of demographic factors on experiences, perceptions, and values surrounding urban coyotes. These would be valuable lines of inquiry for future studies which engage an extensive, quantitative approach to these questions.

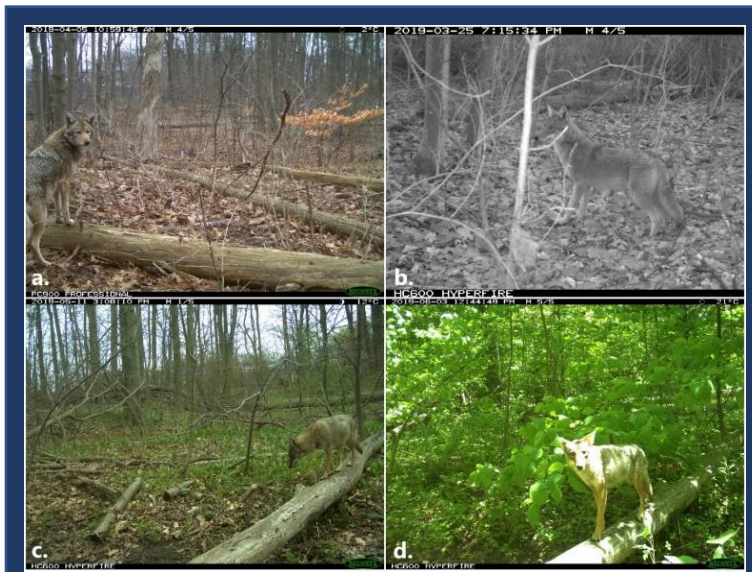


Figure 2. Trail camera captures of coyotes in an urban forest

¹ In this report Key Informants are identified by first and last name as well as professional role. Participants are identified by first name and community of residence. Some participants wished to be named, while others preferred to remain anonymous; randomly-generated pseudonyms are used for the latter.

FINDINGS

Community Perceptions

Key Informants shared their experiences in working with diverse publics, and community members expressed a range of perspectives on coyotes, which included both negative and positive views.

Negative perceptions

Many noted the prevalence of negative perceptions of coyotes within their communities, for instance reflecting:

I don't know if it's size, I don't know if it's reputation, I don't know if it's the fact that they're misunderstood -*Donna Hales, Town of Oakville Senior Policy Analyst*

Others reflected on the puzzling paradox that, although all members of the same family, dogs are adored, wolves are revered, foxes are beautiful, but coyotes are still 'vermin'. Negative perceptions often centred around exaggerated fears and misunderstandings of risk, and 'coywolf' narratives.

Exaggerated fears and misunderstandings of risk

Participants and Key Informants asserted that many negative perceptions of coyotes stem from exaggerated fears and misunderstandings of risk. For instance, coyote bite or scratch rates are infinitesimal when compared with the risks of dog bites (Alexander & Quinn, 2011)². However, the response to dog bite statistics is not that dog ownership should not be permitted, but rather we accept the risks and mitigate them however we can.

It's unfortunate that the fear mongering seems to have really been successful for a lot of these residents. They really do think that the coyotes are a threat to their wellbeing, which is an unfortunate belief to hold. -*Ayla M, Municipal Animal Control Officer*

Conversely, when faced with the significantly lower risk that one may be bitten by a coyote, there is still the insistence that this risk is too great, and coyotes should be removed.

Some participants had real fear and uncertainty about the extent to which coyotes might be a danger to humans:

They are not a benign animal, they are more like a wild predator so I don't know what they're going to do. Is it possible that they might attack a human? I think it is. -*Lisa, Oakville*

Key Informants noted continued pleas from some residents along the lines of, 'What are you going to do to keep us safe?' (Thomas, local politician), not understanding the reality of the risks.

Several Key Informants discussed the protocols in public schools, where if a coyote is sighted nearby during school hours, the school goes into a 'lockdown'. Individuals worried that rather than being based on the best available knowledge and a rational protocol, it reflected exaggerated fear and misinformation. Their concern was that it signalled to students that coyotes were a real threat, whereas there could be more effective and less sensationalized approaches, such as ensuring staff and

² For instance, "It's estimated that 3-5 people are attacked [by coyotes] in the United States each year... In the U. S. it's estimated that about 1000 people a day are treated in emergency rooms for dog bites and in 2010 alone there were 34 fatal dog attacks" ([Bekoff, 2011](#))

volunteers monitoring students during outdoor time are aware of basic hazing techniques in the extremely unlikely case that the coyote did venture onto school property while students were outside. There were two instances recounted during this research of coyotes on school property. In the first, the coyote was present each morning just after the commencement of the school day to take advantage of the abundant groundhog population living in the field adjacent to the school. After a small number of aversion conditioning (humane hazing) treatments, the coyote ceased frequenting the area. In the second



Figure 3. A coyote father grooms his pup next to a suburban road

case, high school students had been handfeeding a coyote and attempting to play with him like a domestic dog. As one key informant noted:

When you've got all that noise and commotion, the coyote, my guess is, going along its trail, doing its rounds, and it's as upset with the kids being there as the adults are with the coyotes being there. It just wants to get out of here. -Thomas, local politician

Aside from risks to humans, other misinformation is prevalent, including that: coyotes lure dogs; they will mate with dogs; their vocalizations mean they are 'calling in the pack'; if you see one during the daytime it means they are rabid or otherwise ill; they are overpopulated; and they are 'taking over' the city³.

'Coywolf' narratives

I think that there is both a fear and the opportunity to exaggerate when people use the term coywolf as opposed to eastern coyote. People will sometimes say, no it wasn't a coyote – it was much larger than that – I know it was a coywolf... the wolf part of the word will instill fear in them which will sometimes hamper their ability to open their hearts and minds to our Eastern Coyotes.
-Joanne Merner, CWC

Participants also noted misunderstandings around who eastern coyotes (*Canis latrans*) are, and fears stemming from narratives around 'coywolf' hybrids. A perception found in news and social media discourses is that there's the "big bad wolf, and then you've got the wily coyote on top of it, and man you've got this mankiller out there" (Ann Brokelman, CWC).

Despite the prevalence of these beliefs, the reality is that the bulk of eastern coyotes' genetic heritage is from western coyotes, with only a small percentage of eastern or Algonquin wolf (*C. lupus lycaon*, or *C. lycaon*) and domestic dog (*C. familiaris*) DNA, largely acquired over a century ago during range expansions (Kays, 2015; Monzón et al., 2014). Many coyote experts highlight that

³ For examples of myths and responses, see CWC's [MythBusters](#) leaflet

morphologically and behaviourally, eastern coyotes are coyotes, not novel hybrids, or half-wolves (Kays, 2015). The term ‘coywolf’ “lacks general support in the scientific community” (Wheeldon & Patterson, 2017, 14). Eastern coyotes are mid-sized canids weighing an average of approximately 34 pounds (Way, 2013), and omnivores who subsist primarily by hunting small mammals such as rodents, foraging for fruits and herbaceous plants, and scavenging (Lukasik & Alexander, 2012; Murray et al., 2015).

Positive perceptions

Key Informants noted that the most prevalent public perceptions encountered by municipalities and wildlife managers are skewed, where one perspective tends to dominate:

Unfortunately a lot of the dialogue is coming just from one sided from the residents. We’re hearing from the residents that are unhappy with the coyotes, but not from the residents that are, because how many people call in just to say, oh hey, I really like living amongst the wildlife. -*Ayla M, Municipal Animal Control Officer*

But Participants and Key Informants did share positive views about coyotes, suggesting that humans and urban sprawl are more often the problem, coyotes are important ecosystem service providers, and they do belong in urban areas.

[The] problem is the humans. We’re invading their territory. The more we expand our cities and outgrow the cities, we’re taking away their natural habitat. And all they’re doing is adapting because they have no place else to go so they’re adapting from their environment to our environment. -*Paul, London*

Humans & urban sprawl as the ‘real’ problems

Several individuals noted that coyotes are not ‘problem’ animals, but rather humans are to blame, because “we’re in their territory” (Joanne McKinley-Molodynia, CWC). This implies that human-wildlife ‘conflicts’ are an outcome that should be expected when animals “are being shoved out of their natural habitats by all this outrageous development” (Sharon, Oakville).

Ecosystem service provider

Coyotes were noted as playing an important role as ecosystem service providers, both scavenging and managing prey populations. As scavengers, they are a ‘clean up crew’ valuable for removing roadkilled animals, for example. As urban predators, numerous Participants and Key Informants highlighted the key ecological role that coyotes play. This centred primarily on managing prey populations:

They keep the rodent populations in check that’s not such a bad deal -*Leslie, London*

Especially where residents were concerned about rodent populations, including rats, they noted the important role of

I very much think that we do need predators in all ecosystems, even urban ones. -*Jason, London*

urban predators in managing these populations and preventing the need for more ecologically problematic means of addressing the issue, such as rodenticides:

Residents would call it overpopulation of coyotes, I would call it our pest control moving in and doing what they're supposed to do. -*Ayla M, Municipal Animal Control Officer*

Some residents expressed the wish that there were *more* coyotes in their neighbourhood, to assist with their largest perceived wildlife issue – rabbits in their garden:

I wish they'd get in my backyard and eat some more bunnies.
-*Nick, Oakville*

Belonging

Overall, many individuals shared perspectives which suggested that coyotes are not out of place in the urban environment, but actually belong in cities:

Even though I'm living in a suburban area, I still see it that I'm sharing this with other things that aren't humans.
-*Stacey, Oakville*

We are not put off by the animal life in the area, if anything we want to be able to help these animals be sustained inside the area, because they were here first and we are just custodians as well. We're all just here together. -*Sharon, Oakville*

One individual who had a den on her property in the centre of town expressed this tolerance, saying:

There are some young children further along, but no they didn't seem to bat an eyelash. We were kind of all okay about it. It was nice. What are we going to do? She's chosen her spot, we just have to wait it out. I definitely didn't want to do anything drastic, so we just waited it out... cohabitating with the coyotes, we were fine with it. -*Leslie, London*

Part of this acceptance stems from viewing the urban environment as an ecosystem:

I think in terms of our modern outlook, is that somehow, when we step outside, ecosystems don't exist, but in fact they do. They exist in your lawn. They exist in everyone's backyard. They exist beyond that, in our greenspaces, in our parks... but what I see is that people are often surprised that wildlife are existing in the city, that somehow they belong elsewhere. But wildlife don't make those distinctions between the ecosystems in your backyard, and the ecosystems that are somewhere we would consider rural. -*Wendy Brown, CWC*

Rather than seeing urban animals as out-of-place and in need of removal, we need to find ways of living with wildlife, including coyotes.



Figure 4. A pregnant coyote captured on a trail camera

I think if we want to have more natural space then we're going to have those coyotes, we are going to have the wildlife there... people shouldn't have the mindset of, well get rid of all the wildlife! Years and years ago maybe that's what was done. As soon as there's a nuisance well they kill the nuisance... I think we're understanding there's more of a balance to be had.
-*Brandon Williamson, Upper Thames River Conservation Authority*

The Lives of Coyotes



Figure 5. Field investigations provided evidence of (a) coyote occupation of areas; (b) anthropogenic provisioning, including waste & birdseed (d); and (c) natural food sources such as rodents

Research findings also yielded insights into the lives of coyotes, in terms of: their behaviours & urbanization; health, disease, & rehabilitation; and the impacts of the (mis)interpretation of behaviours on their lives.

Coyote behaviour & urbanisation

Key Informants and Participants noted the adaptability of coyotes, relaying that in many ways they had become well suited to urban environments. Some of this centred on the ample food available:

I think the potential for food sources is much higher in the city, so I think that's also part of the reason that they thrive so much in cities, we're really bad with our garbage. -Sarrab Castillo, TWC

During field investigations, visual analyses of coyote scats identified the presence of natural foods such as mammalian bones and fur, or fruits and vegetation which make up a portion of coyotes' diets. They also occasionally suggested intentional or incidental anthropogenic food provisioning, such as the presence of birdseed frequently noted in one urban forest, and what looked like beans on another occasion.

Another factor associated with coyotes' success is available habitat patches and travel corridors:

Wooded areas, creek, floodplains, river floodplains, railway tracks are all highways for wildlife through the city and anywhere you would get a population of other animals too, of other wildlife because they're going to be looking for food. -Kent Lattanzio, London Animal Care Centre

The ability to avoid human detection was also noted as an important behaviour which contributed to coyote success in urban areas. Findings from trail cameras supported this assertion. In one urban forest across from an elementary school, coyotes demonstrated least activity at 9:00 a.m. and 3:00 p.m., at the commencement and termination of the school day, when humans are most active through the area (see Figure 5). Activity peaked between

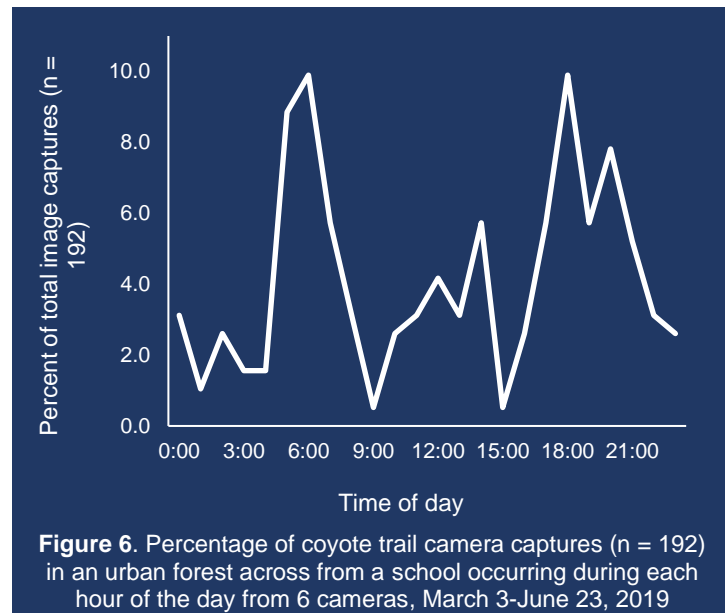


Figure 6. Percentage of coyote trail camera captures (n = 192) in an urban forest across from a school occurring during each hour of the day from 6 cameras, March 3-June 23, 2019

the school day, when humans are most active through the area (see Figure 5). Activity peaked between

5:00 and 7:00 a.m. and 5:00 and 7:00 p.m. demonstrating a crepuscular rhythm of greatest activity around dawn and dusk, with more limited nocturnal activity, contrary to what has been demonstrated in other studies (e.g. Grindler & Krausman, 2001; Riley et al., 2003).

A commonly held assumption by urban residents is that only ill coyotes are active during daylight hours. But there are many reasons why individuals may be active during the day, including foraging needs and opportunities. For instance, with the family living around this forest, there was suspicion that the coyotes were being provisioned food and thus their activity patterns could have been partially dependent on the routines of feeders.



Figure 7. A coyote pup with mange rescued from a golf course

Health, disease, & rehabilitation

Another common theme was coyote health. While many individuals noted that the coyotes they saw appeared healthy, others expressed concern over mange:

Most of them are mangy and you kind of feel sorry for them. -James, Oakville

Mange is an infectious skin disease spread by mites (*Sarcoptes scabiei*), which can prove fatal to infected animals. TWC treats coyotes with mange, releasing them once they have recovered:

A large percentage of our coyotes coming in are younger guys that have gotten mange from being born probably into a den that's already contaminated. -Andrew Wight, TWC

Several key informants highlighted that mange is not simply a natural wildlife disease, but was employed in the early 1900s in North America as a biological weapon in the war against predators, with coyotes and wolves intentionally infected to spread the disease to their families (Knowles, 1909; Pence et al., 1983; Niedringhaus et al., 2019).

Some individuals with coyote experience noted that mange infections can change behaviours, making them more conspicuous within neighbourhoods:

When they were sick, there were some of them who were just sitting on the curb just scratching. So they wouldn't mind people walking by, which is not normal behaviour either right, they're sick. -Beatriz Gomez, Oakvillegreen Conservation Association

Wildlife rehabilitators emphasized that rehabilitation can successfully mitigate such concerns. Rehabilitation was noted as an effective and important means of mitigating some human-induced harms to wildlife in cities:

What a wonderful way to go from feeling helpless and ineffectual, if you really care about biodiversity, to actually have a hand in doing something that contributes in a positive way to it. So for me, it's like going from helpless to empowering yourself to make a difference. -Wendy Brown, CWC

If we rescue [the sick coyote], s/he's going to be out of your hair, so you'll be happy, and we'll be happy because we're helping them recover. And when they are healthy, you'll never see them again... a healthy coyote is an invisible coyote behaving as s/he should. -Andrew Wight, TWC

(Mis)interpretation of behaviours

Another common topic was the ways in which misinterpretations of coyote behaviours negatively impact the lives and chances of individual coyotes within cities. As noted above, many fears about living with coyotes stem from common myths. One that came up frequently was the fear of hearing their vocalizations, but as one Participant explained:

When you hear them howling at night that's how they socialize... they're not doing that to make us afraid, they're just talking to each other. -Paul, London

Another involves encountering coyotes, and the assumption that they are 'bold' or 'aggressive' if they are seen, display any curiosity, or shadow individuals. As one participant reflected:

I realize they're not dogs but they are canine and they're curious. So if one did step out [onto the trail], my initial read of it would not be aggressive. -Jason, London

Experts note coyotes' tendency to shadow individuals with domestic dogs in particular, to make sure dogs are leaving denning areas and not a threat to pups.

Others noted that behaviours that are often interpreted as 'aggression' are in fact the result of food conditioning, indicative of the expectation of food, rather than threat. Key Informants highlighted that individual coyotes' histories of interactions with people and domestic dogs influence their behaviours, and investigating the context is necessary for determining the appropriate response (i.e. ceasing feeding, removing attractants, leashing dogs, deploying aversion conditioning when necessary).

These comments highlight that the ways in which individuals perceive coyotes influences how



Figure 8. A coyote walking down a suburban sidewalk

When someone sees a coyote responding to a food reward for example, they're responding very much like a dog. They're putting themselves in a very submissive position, they're sitting in great anticipation waiting for you to come out and give them food. So in [this] park that was the behaviour, but the police perceived that as a threat. And it was reported in the media as a threat. When the coyote took a few steps towards the officers, they could not see that that was absolutely appropriate behaviour for a coyote that has been hand fed. -Wendy Brown, CWC

communities respond, which can either promote coexistence, or result in stress, or even death, for the animals involved. When untrained first responders interpret curiosity or food demand as aggression, the coyote risks being killed, rather than deploying alternate strategies to manage any concerns. Thus, the lives of coyotes are deeply entwined with human dimensions of interactions, including residents' and responders' understandings, behaviours, education, and training.

Sources of Conflict

Several key sources of human-coyote conflict in urban areas were identified through this research, namely: feeding; domestic dogs; landscape changes; misinformation & media sensationalism; and wildlife NIMBYism.

Feeding

During interviews and field investigations it became clear that the majority of ‘hotspots’ for coyote issues, and coyote behaviours which were encountered by the community as ‘problematic’, result from intentional feeding or unintentional anthropogenic food provisioning (for instance birdfeeders, fruit trees, garbage in parks, compost piles, barbecues, backyard/community gardens, pet food). Some individuals feed squirrels or other small animals, unaware that they are also attracting unwanted wildlife, like coyotes (and rats):

I would say a problem is created with the feeding or food source, its not the coyote that’s the problem, it’s the people that are creating the problem. So remove that food source, the coyote goes away.
-Kent Lattanzio, London Animal Care Centre

People are not careful with their trash, they’re feeding the birds, they’re feeding the squirrels. They haven’t made the connection that feeding squirrels ultimately means feeding coyotes.
-Ayla M, Municipal Animal Control Officer

Similarly creating habitat for wildlife on one’s property, such as wood or brush piles, could have the same effect of attracting prey species, and coyotes as a result.

Key Informants highlighted that food was a driving source of conflict:

If a coyote is becoming a ‘problem’, it’s probably because it’s being fed. People are not acting properly around it. -Beatriz Gomez, Oakvillegreen Conservation Association

This highlighted that rather than thinking about ‘problem coyotes’, the real issue to be discussed and managed is ‘problem’ human behaviours. Individuals noted that the drive to feed wildlife may be a wish to be helpful, but that the results are not:

I don’t think anyone is trying to be ‘bad’, I think they’re just trying to help, or they see coyotes are thin, and so they want to leave food out. -Kristine Elia, City of Niagara Falls

You think you’re doing them a favour but you’re not doing them a favour. You’re setting them up for problems and they’ll be the ones to pay the price. -Susan, Oakville

Often, a simple solution to human-coyote conflict is to educate residents about the importance of not feeding and removing food attractants, and using bylaws where necessary to ensure compliance. Once the feeding is resolved, often the problem is eliminated. Communities with consistent messaging about this important topic are seeing success:

You can follow the behaviour of certain coyotes, and as soon as you take the feeding issue away, for example, you can see that reports start to die off.
-Donna Hales, Town of Oakville Senior Policy Analyst

I think people started getting the message, don’t feed it. It will go somewhere else. Well it’s like, a fed bear is a dead bear. -Thomas, local politician

Domestic dogs

Another key source of conflicts is interactions between domestic dogs and coyotes, highlighting the importance of responsible companion animal practices. As one Key Informant noted:

Generally what happens is people are walking their dog off leash, so the dog is off into the bush, the person is walking along the trail, the dog runs into a coyote or has a confrontation with a coyote, runs back to the owner, now there's a human-coyote conflict as well. And that's probably one of the biggest calls we get. -Brandon Williamson, Upper Thames River Conservation Authority

You run into conflicts where a coyote may attack a dog because its at large... size doesn't always come into play if coyotes are out there, they're protecting their family, so they will do that. They're good parents. -Kent Lattanzio, London Animal Care Centre

Key informants emphasized that this should not be seen as 'problem' coyote behaviour, as it is natural for a wild animal to be protective, especially while rearing young. Participants recounted personal experiences of their dogs interacting with coyotes, which reflected this understanding:

My dog went within 10 feet of [the coyote] and then she came pretty close to me fairly aggressively. But being a nursing female, I get that. I've had female dogs that have been way more aggressive than that when they've had pups. -Adrian, Oakville

The issue of not allowing dogs to roam freely is contentious, with many dog owners feeling their dogs should have the right to explore off-leash. However, the risks dogs pose to wildlife are also often overlooked:

We feel very entitled, and we don't consider our impacts. We don't consider the fact that when I run my dog off leash, there may be all kinds of wildlife that may be in that space that is being jeopardized by my dog -Wendy Brown, CWC

The solution to this issue is straightforward: "keep your dog on a leash, give [coyotes] some space" (Kent Lattanzio, London Animal Care Centre). Many participants expressed a willingness to follow these best practices with their own canine companions:

I've seen a coyote with my dog and all I do is pick him up and carry it -James, Oakville



Figure 9. A coyote mother with her two pups on a suburban lawn

One participant recounted her practices when it comes to the coyote family living in an urban forest near her house:

We avoid them. We just walk around, change direction if needed. That's it. They've never approached us while walking, ever ... it would be irresponsible not to [leash our dog]. Like if my kid was there and I saw a coyote and didn't call my kid back, that would be irresponsible.

-Stacey, Oakville

Landscape changes

Key Informants also noted that changes in the urban landscape, including growth and new development, can result in changes to coyote habitats and movement patterns, making them more visible within a community:

When there's new development in an area that might have been farmland, or not used prior by humans so much, the coyotes are displaced... So it causes some residents to have concerns that way because they see them more frequently.
-Carey Campbell, City of Niagara Falls

When we have infrastructure changes in the city of London, they're now having to navigate differently. We are now going to see them more often -Wendy Brown, CWC

Though there are no easy solutions beyond sustainable urban planning and the prioritization of greenspace (both for wildlife and human wellbeing), educating residents around areas of development or landscape change that seeing coyotes is to be expected, and how to respond in case of an encounter, is an important way to reduce excessive fear and complaints.

Misinformation & media sensationalism

Pervasive misinformation, exacerbated by sensationalized media accounts, is a key source of conflict. As participants noted:

I think it's just because coyotes are new wildlife in terms of what people are familiar with or accustomed to... it's misinformation for the biggest part. -Susan, Oakville

People who are afraid don't understand, I think. If they really knew what a coyote was about, I don't think they would be. -Jason, London

A Key Informant recounted a story of an individual who was walking their dog off-leash in an urban park when their dog took off into a wooded area in pursuit a coyote. The following day, a news story of the incident reported that a dog was attacked by several 'aggressive' coyotes, when in truth the dog was unharmed, and was in fact the pursuer of a lone coyote.

It's a challenge... it can snowball very easily out of our control. -Paul Gambriel, London Police Service

The media doesn't help that in that they create misinformation or don't put out the correct information for the public. -Kent Lattanzio, London Animal Care Centre

I think that there are some people who don't want the truth because it's not as exciting or as dramatic as the fable they create. The truth is that coyotes are just wild animals trying to survive – just as we are trying to survive and successfully raise our children. They are not plotting or planning against us – they are living creatures with a simple agenda of survival. Like us they live, they breathe, they take care of their families and they need to eat and feed their family.
-Joanne Merner, CWC

Wildlife NIMBYism

NIMBYism (an acronym for 'not-in-my-backyard') is used to characterize environmental conflicts that stem from something being seen as positive in general or abstract terms, but negative when it impacts one's own lifestyle, property, etc. There is a certain NIMBYism in conflicts around wildlife, where many individuals may value wild animals in abstract terms, wanting them to exist, but elsewhere. Residents may think coyotes are interesting or beautiful, or enjoy seeing them while driving through rural areas, but still have a strong preference for not living in proximity to them.



Figure 10. A coyote family running down a suburban road

I'm happy to have the coyotes exist. I don't have a solution. I do feel nervous with them when I see them. I'm always looking over my shoulder... Nobody wants to see them destroyed... but we certainly feel, at least I do, like a prisoner in my own area because I'm not comfortable to freely walk around where I want to because I have concerns that I'll stumble across a coyote that doesn't want me there.

-Lisa, Oakville

As a result there is often not a simple split of positive versus negative views of coyotes. Many people may look upon them positively, but feel frustrated at the idea that they should have to modify their own lifestyle as a result of coyotes living in their neighbourhood. Individuals who may hold negative views of coyotes living in their neighbourhood may simultaneously want them gone, but also value their lives and be averse to lethal removal.

This is why translocation is such an appealing answer for many residents: the coyotes will be gone, but not killed. One can convince oneself that they are thriving elsewhere and no harm has been done, but now one doesn't have to deal with the perceived costs of living directly alongside coyotes. However, several participants in this study express the opposite view that they would not have moved to an area near parks or ravines if they were not prepared to live alongside wildlife.

Some individuals feel that [coyotes] don't have any business being in their backyard especially when they have a fence. People feel that it's ok for them to be out there in coyote habitat, but not for coyotes to come near their own spaces, in many cases, without the understanding of why a coyote would want to come into their backyard. They may have bird feeders or a compost pile which attracts rodents, which in turn could attract coyotes, but when this is addressed they will comment that they own the property and put up a fence, but coyotes don't understand fences or property lines.

-Joanne Merner, CWC

Several individuals noted further cultural dimensions which may be at play. In particular, they noted that wealthy neighbourhoods tended to be overrepresented for coyote complaints: ample greenspace, large properties, and more resistance to making lifestyle changes necessary to live alongside wildlife. Several times, property taxes were mentioned, as if by virtue of paying the municipality, one should be exempt from having to share space with 'undesirable' wildlife:

You get, I pay taxes and I have to get my dogs licensed. These coyotes don't pay taxes and who's getting a tag for their license?... they feel like they're being cheated out of their property... and what's the town going to do about it. *-Donna Hales, Town of Oakville Senior Policy Analyst*

Paths to Coexistence

Research findings highlight opportunities for coexisting with wildlife like coyotes in cities. Some key paths to coexistence include: education & changing the dialogue; aversion conditioning; public reporting; and the importance of partnerships.

Education & changing the dialogue

Based on the current scientific literature and the perspectives of Key Informant experts interviewed for this study, culling and translocation are not effective, sustainable, nor humane solutions to urban coyote conflicts. At public meetings and in news and social media articles, residents continue to demand that coyotes either be culled or translocated. The assumption that either of these strategies are ‘on the table’ as a realistic conflict-mitigation option is a serious barrier to moving conversation and action forwards in a way that can effectively, sustainably, and humanely promote human-coyote coexistence in neighbourhoods. City managers, local politicians, and wildlife practitioners repeatedly encounter the sentiment: “I don’t want to hear one more time about ‘coexisting’” (Thomas, local politician); but there is no other option. Coyotes are here to stay in urban areas. Thus, coexistence requires accepting this reality and coming to view coyotes as legitimate urban inhabitants.

Key informants highlighted the importance of education about coexistence, but also the challenges:

It seems to be a very progressive and for some people radical idea that we coexist with wildlife, to this day, still. And that goes way back. We are used to dealing with wildlife by eradicating them, putting development first, putting our own interests first, and seeing them as a resource to be exploited. So we’re competing for coexistence with a disconnect, with a lack of good information and wildlife awareness, with a lack of understanding about how to be safe. -*Wendy Brown, CWC*

You just have to keep trying to send that message home and really spell out that unfortunately... that type of quick and easy solution is nonexistent... you really have to make them understand that this magical quick easy solution of getting rid of the coyotes is literally impossible, and is not going to happen. -*Ayla M, Municipal Animal Control Officer*

Despite the challenges of combatting misinformation and shifting public perceptions through education, sentiments from study participants made evident that this task is achievable:

I’ve come to accept them. You teach your kids. I don’t actually feel worried about them. I don’t. I’ve never been injured by one, I’ve never felt threatened. I hope that doesn’t change from that. I look at the website and mostly you see small pets that can get taken. That’s obviously a concern, I have a small pet. But that’s up to us to manage. -*James, Oakville*

I made it a point to kind of learn about what was going on when I first became aware of them, so I didn’t have any qualms whatsoever. -*Susan, Oakville*

Aversion conditioning

A practical tool for coexistence discussed by Key Informants and Participants is aversion conditioning, also termed humane hazing⁴. It involves using deterrence techniques to teach coyotes to be wary of humans and certain spaces:

You can re-educate a coyote... making sure that they behave again as they should behave.
-*Beatriz Gomez, Oakvillegreen Conservation Association*

Individuals recounted successfully using the 'bag method' (snapping a large garbage bag filled with air), popping an umbrella, shaking a metal can or tin filled with small rocks or coins, crinkling an empty plastic water bottle, and simply looking big and being loud, waving arms above their heads, shouting assertively, and taking firm steps towards the coyote if necessary.

Once we got rid of all of [the feeding] issues, and with the heavy-duty hazing, we stopped getting reports, things settled back down again.
-*Donna Hales, Town of Oakville Senior Policy Analyst*

Wildlife managers recounted the success of aversion conditioning in mitigating conflicts in their communities. Persistence was sometimes required in the case of very food conditioned coyotes. With one coyote who had been hand fed, it "Took five times [hazing] and then finally he gave up. The next day, I came back, and he took one look at me and he was gone" (Ann Brokelman, CWC).

Agencies have witnessed the success when deployed by community-members:

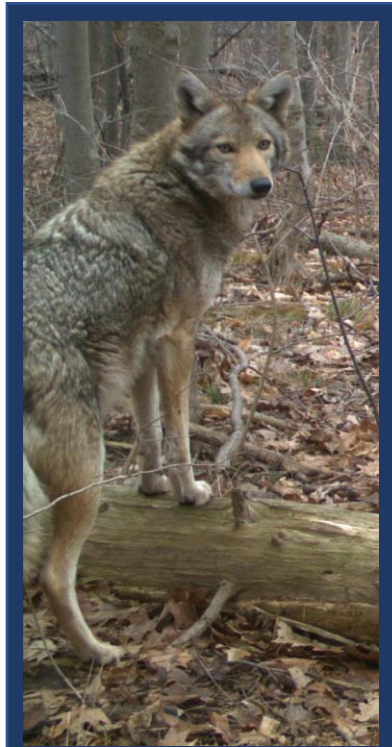


Figure 11. Trail camera capture of urban coyote

They partake in the hazing and then it empowers them to have a response. -*Kent Lattanzio, London Animal Care Centre*

There are several important considerations when implementing aversion conditioning. One is deciding on goals and when aversion conditioning is or is not an appropriate response. Around residential properties, during encounters, or in spaces communities do not wish coyotes to occupy, hazing is the right option. But coyotes need to exist somewhere, and in many instances their inhabitation of greenspaces should not automatically be seen as problematic or discouraged. A second consideration was the importance of clear communication, body language, and confidence:

I get out of my truck, and they go running the opposite direction, and I do think it has a lot to do with body language... I am very confident that these animals are scared of me. -*Ayla M, Municipal Animal Control Officer*

Individuals noted that if residents have not been properly trained, or are fearful or uncertain, they may have trouble effectively sending the required message to coyotes. This is why training is important, and reshaping (largely unwarranted) fear of coyotes.

⁴ For further discussion see [Van Patter & Sampson \(2020\)](#) and [Sampson & Van Patter \(2020\)](#)

Public reporting

A number of communities have implemented an online coyote reporting system, which can keep track of sightings and encounters using mapping software. Many study Participants did not know there were reporting systems within their communities, while some had used them:

I've contributed to that several times in my journeys. It's just helpful. -*James, Oakville*

Others were aware of them, but didn't feel they were necessary:

I don't see the purpose of that, just to be able to say you saw a coyote, so I don't see it as effective. -*Stacey, Oakville*

A reporting system can be helpful in identifying possible 'hotspots' of interaction, assisting municipalities in deciding when interventions such as education are needed:

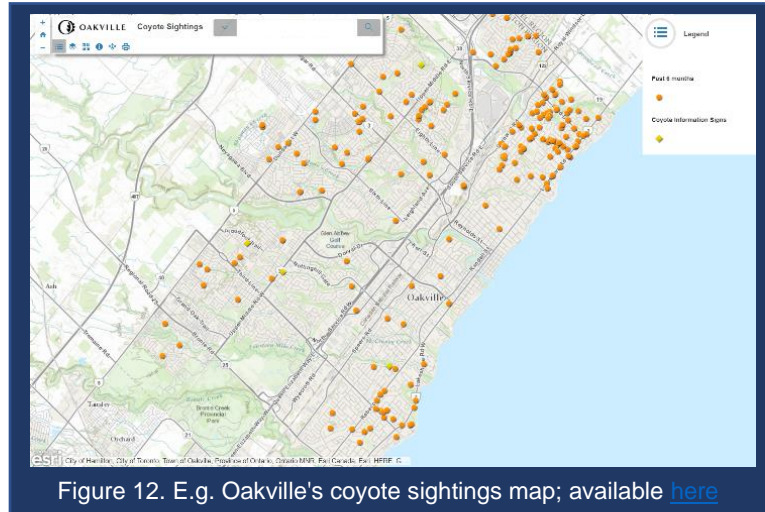


Figure 12. E.g. Oakville's coyote sightings map; available [here](#)

If there are a multitude of reports, concerns, you know eyebrows are raised, we might do a literature drop in that area. -*Carey Campbell, City of Niagara Falls*

Wildlife managers can be proactive, preventing issues before they can escalate. Reporting systems can also shed light on the efficacy of interventions.

Others noted concerns, including the accuracy of information received from public reporting:

The problem here is that you have the same people reporting, reporting over and over and over and over again, so you have one area where a coyote is, and like 120 times per month, but it's the same coyote and it's the same person doing the reporting. -*Beatriz Gomez, Oakvillegreen Conservation Association*

If we start to see issues in a particular area too we can preventatively... do an outreach and education session for the community, maybe do some extra patrols with our bylaw officers for dogs off-leash, or you know just looking at property standards to see if there's anything going on... as soon as you take the feeding issue away, for example, you can see that reports start to die off. -*Donna Hales, Town of Oakville Senior Policy Analyst*

Another issue is that it could create an expectation that reporting a sighting means there will be a response, whereas municipalities and wildlife managers are unlikely to intervene unless there is a cause for concern:

I don't like it because people feel that if they call their councillor or if they call the humane society somebody's going to go out there and scoop it up... And so I think we've led people to different expectations than what's there... What purpose does it serve except inflame people? -*Thomas, local politician*

In one instance a local news media outlet had initiated their own reporting system, which Key Informants noted as problematic:

The local newspaper started up [a reporting map], which is not good. It's basically unfiltered people writing, it's more opinion pieces as opposed to data. And so that's been a real problem... the language gets people really worked up. -Donna Hales, *Town of Oakville Senior Policy Analyst*

It was recommended that such programs be run by municipalities, rather than informally. Furthermore, some felt that only certain information should be publicly available, for instance the point locations, but not the associated comments. Others felt the map should not be publicly available, as even locational data could be misconstrued, for instance if points were misinterpreted as individual coyotes, rather than as multiple sightings of the same individual(s), resulting a greatly inflated understanding of coyote populations within a community.



Figure 13. A coyote father with his two pups

The importance of partnerships

Finally, this research made clear that partnerships and communication are central to effective coyote response strategies. The problematic nature of *ad hoc* wildlife responses has been noted, in that they result in “uncoordinated, unaffordable, unscientific, and unsustainable” practices (Alagona, 2015). In all three case study communities, successes in mitigating conflicts with coyotes centred on such partnerships:

The key parts of the whole coyote program, the biggest one is outreach and education, partnerships, which is Humane Society, we have a good relationship with the local media, they're very supportive which I think is huge... our councillors are very on board, which again is a very important part. -Donna Hales, *Town of Oakville Senior Policy Analyst*

The community came together, we had representatives that included the mayor, the Humane Society at the time, the school board, the police, bylaw enforcement, and a number of other organizations. -Carey Campbell, *City of Niagara Falls*

If the community has the right resources, the education aspect, your stakeholders have the training, protocols are put in place, everybody's better off. The coyote is better off and so is the public... meaning your municipality, animal control services, police, communications through the city, media as well. -Kent Lattanzio, *London Animal Care Centre*

A comprehensive wildlife framework is key to ensuring smooth protocols that are both proactive and preventative, and the ability to respond effectively in a coordinated fashion to any emergent issues.

CONCLUSIONS

Overall, communities are slowly adjusting to the reality that coyotes are part of our urban ecologies:

“what was I think before fear, and now is just an understanding that coyotes live with us and among us, and ... like any wildlife, you have to be aware, and perceptive, and understand what their habits are, and you protect yourself and they protect themselves, and we kind of coexist together -*Carey Campbell, City of Niagara Falls*

This is not without its tensions, and there will be ongoing negotiations as communities work to balance the concerns of various stakeholders while developing wildlife strategies that are effective, humane, community supported, and sustainable.

By coordinating across agencies to implement proactive education and response strategies, communities are witnessing marked success in minimizing human-coyote conflict. As one key informant in London noted, as a result of such practices reports from concerned residents about coyotes “have dropped off from dozens a year to only a handful now” (Brandon Williamson, Upper Thames River Conservation Authority). These successes should be celebrated and serve as a model for communities working to develop wildlife coexistence frameworks.

Overall, coexisting with wildlife such as coyotes is not only possible, it is happening all around us, all the time.

It's really critical that policies reflect a holistic approach to co-flourishing. And for a wee bit of inconvenience that might be part of adjusting our daily activity, to have these amazing creatures in a community, it's just really quite a gift
-Lesley Sampson, CWC

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