VAST PERCEPTIONS AND AMBIVALENT ATTITUDES: THE CULTURAL CONSTRUCTION OF THE "RACCOON CAPITAL" OF THE WORLD

by

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ABSTRACT

Encounters between humans and raccoons are increasing in frequency as both population densities rise. These encounters spur a vast range of individual perceptions and attitudes concerning raccoons. Moreover, human perceptions and attitudes toward other animals intersect with conspecific relationships. Therefore, this study aims to illuminate individual and collective social perceptions and attitudes through the exploration of discourse data collected over a ten-year duration from Toronto Wildlife Centre (TWC), the only wildlife rescue and rehabilitation centre in Ontario. Following a mixed-methods exploration of the data using NVivo, results reveal that the language used to describe human-raccoon encounters may be rooted in either of two competing social constructs that vary across individuals: an ethic of compassion for other animals or a social construction of risk that perpetuates stereotypes. Subsequently, further research aimed towards exposing implicit stereotypes is integral to deconstruct the problematic notions that mutually reinforce denigration when oppressions interlock.

Keywords: urban ecology, animal, encounter, discourse, liminality

DEDICATION

For Katie, whose sobering presence and constant companionship during my most trying times evoked unsurmountable happiness and infinite gratitude, and sparked my passion into thinking critically about human relationships with other animals.

And for Luna, whose timing could not have been better.

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FOREWORD

My aim in pursuing a Masters in Environmental Studies was to study human-wildlife conflict in urban areas. Throughout my experience in the Faculty of Environmental Studies, my area of interest evolved to consider human relationships with animals more broadly and holistically.

As per my plan of study (PoS), I developed an understanding of current topics, intricate theory, and research methods in the field of human-animal studies. My major research explores the theoretical underpinnings of human-raccoon relations and co-shapings, the problem of categories for humans and other animals, and the intersectionality and oppression through an in-depth literature review. Moreover, through a content analysis of the discourse used by the public to describe their encounters with raccoons in the highly urbanized landscape of the General Toronto Area, I analyzed social phenomena and dissected ambivalence comprising individuals' perceptions and attitudes.

Through the strategies outlined in my PoS, I am confident that I have met or exceeded the learning objectives supporting each of the components structuring my area of concentration: Critical Anthrozoology.

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CHAPTER 1: INTRODUCTION

"Never underestimate the cunning of an urban raccoon" (para. 1), Lakey (2017) writes for Toronto's *The Star* in response to public reports of raccoons breaching the city's new green composting bins, which have locking lids that are intended to be "raccoon-proof" (para.2). Lakey (2017) depicts angry Torontonians in the wake of a mess of green bins toppled and organic debris scattered by raccoons. Comments made by residents, like "I have seen this first hand, at the front of my garage. Then the raccoons hiss and snarl at you when you try to chase them away," adding, "Our driveway is muck stained from raccoons opening our bin so frequently!" implies the frustration lands squarely on raccoons (Lakey 2017, para. 8).

Underlining the negative sentiment towards urban raccoons, news article titles like *Toronto wages war on Raccoon Nation* (Loriggio 2015) and *a brief history of Toronto's Great Raccoon War* (Sachgau 2016) further position raccoons as villains of civil society. Loriggio (2015) writes, "the masked animals have become somewhat of an obsession in the city some have dubbed the raccoon capital of the world." (para. 4).

Former and late mayor, Rob Ford, was on record urging officials to tackle what he referred to as a severe "raccoon problem" (Loriggio 2015, para. 2). Furthering the use of the on-going war rhetoric, his successor, Mayor John Tory, declared that "defeat is not an option" (Loriggio 2015, para. 3). Sachgau (2016) writes, "Toronto's war with the masked robbers has been going on for years. Here is an unofficial synopsis of the major battles, wins, and losses of the Great Raccoon War" (para. 2). In this article, Sachgau uses words and phrases like "our enemies" (para. 3), "warfare" (para. 5), and "masked enemy" (para. 7) to describe raccoons as the campaign against what Tory calls "Raccoon Nation" continues.

Loriggio (2015) also mentions a criminal case involving a man who attacked a family of raccoons that destroyed his vegetable garden, stating that the public was equally spit condemning and defending his actions, demonstrating the city's love-hate relationship with raccoons. In a Forum Research results poll, it was revealed that 52 percent of people approved of euthanizing raccoons, with only 28 and 20 percent who disapproved or had no opinion, respectively (Loriggio 2015; Mangione 2014).

In contrast to the negative visual imagery these writers and interviewees evoke in these articles are a plethora of media articles and accounts depicting raccoons as pets. Conti, a writer for *Vice*, wrote an article titled, *How I learned you probably shouldn't try to turn raccoons into pets* (2015). Conti tells the story of an encounter with a "baby raccoon" (para. 4) after deciding "to get some pets" (para. 3), which led to incidents of intentional feeding and resulted in an entire family of raccoons living under their deck. Conti's resident raccoons went from "timid" (para. 4) and "adorable" (para. 5) to "not-so-adorable" (para. 14), spreading garbage all over the lawn and causing "general mayhem" (para. 16). Conti states becoming afraid of them, though still refers to the animal as "my beloved raccoon" (2015, para. 17).

In another example, the popular Instagram account, Pumpkin the Raccoon, has over 1.5 million followers and over 1,200 posts containing photos of an orphaned raccoon living as a pet in Nassau, Bahamas. Not only does Pumpkin have an impressive social media presence, the raccoon is also the subject of a book titled, *Pumpkin: The raccoon who thought she was a dog*, which is about her relationship with the two rescue dogs she lives with (Pumpkin the Raccoon 2018; Vacco-Bolanos 2018).

What these cases illustrate is the ambivalence among humans and their relationships with liminal animals. That is, other-than-human animals that do not fit into the dualist ideology of

belonging to either realm of wild or domestic. Rather they are more or less intermediary in their status (Luther 2013). Accordingly, many non-human animals straddle the boundaries of laboratory experimentation, natural history, and pet-keeping (Pettit 2010b). What is interesting about the liminality of raccoons is their position as both friend and foe and the value-laden words used to describe them in contemporary society; it raises questions about humans' individual and collective relationships with conspecifics as well as across species. Specifically, how some animals fit into human societies; the myriad and contradictory positions that animals occupy in society (e.g., as pets, pests, mascots, and food); the intersections of speciesism, racism, and sexism; and the ways in which relationships with other animals both reflect and shape social life and culture.

Statement of Purpose

Contradicting ideas of urban spaces persist in normal contemporary society. As populations explode, humans have made the shift from mostly rural animals to predominantly urban for the first time in modern history (Gehrt 2010). Not surprisingly, the collective demands humans have for an artificially carpentered infrastructure invariably disrupts the local ecological systems that have been in place for millennia (Waldau 2013). This urban development, driven by notions of civility and social progress, concurrently alienates other animals that occupy these dramatically transforming spaces (Bateman & Fleming 2012). Therefore, how we continue to develop on finite malleable land increasingly reveals a myriad of cascading consequences for the ecologies of other-than-human animals, and in turn, expose harsh reflections of our individual and collective human selves. Specifically, another animal is a pet when it serves us, and alternatively, a pest when it inconveniences us.

In Canada, the proportion of the populating living in a census metropolitan area (CMA) 70.5 percent, or approximately seven out of ten Canadians. Moreover, more than one in three Canadians (35.6 percent) are living in either Toronto, Montréal or Vancouver, Canada's largest three CMAs. Population growth is typically three times higher in CMAs than elsewhere in Canada (Statistics Canada 2018). The contentious intersection of different animals, histories, cultures and politics persists as population increases and urban sprawl continues (Patterson, Montag and Williams 2003).

To illuminate the often forgotten dynamic of interconnected life, this research considers the underlying drivers of human perceptions and attitudes concerning raccoons inhabiting urban spaces. The ways in which language influences the meaning we assign to our surroundings, and subsequently how the words we use to describe our encounters reflect on us and how we act about the world. Moreover, it highlights how the language we choose to describe these encounters illuminates human identities as a whole. And last, it describes how knowledge of the intersection between human encounters and perceptions and attitudes concerning liminal raccoons can generate new understandings about the social world around us.

Animals are a sentient entity with whom we cannot directly communicate, so we project ideas and attitudes onto them. We make sense of what we don't understand by how much or how little we perceive them to be like us. When we study how we relate to animals, we are studying ourselves (Fudge 2004).

This paper will do three things. First, it will demonstrate through the study of our relationship to raccoons how human identity and its notions of race, gender, and class are practiced on animals. While recognizing that this plays a role in the lives of many animals,

whether on factory farms, in zoos, or the lab, for the purposes of this paper, the focus will be on the raccoon and its relationship to humans in cities.

Second, as established players in our societal notions, other animals in urban spaces in particular have affected human and non-human animal relations and practices, especially in our beliefs about out social world. This paper will explore this idea through analyzing polemic discourses that have reduced both animals and people.

Last, we will focus on one region, Toronto, Ontario, to show this area's unique relationship with raccoons bringing these arguments together by looking at what happens when humans and raccoons interact. By analyzing human encounters with raccoons in the urban context, people have the opportunity to understand the reciprocal relationship with liminal animals at both the individual and societal scale. Ultimately, then, the nuances of the perceptions of the relationship between city dwellers and raccoons will become clear and the interrelatedness of residents as both creators and viewers of symbolic representations and possessors of perceptions and attitudes will be elucidated. Then, analysis of these representations may be useful to make predictions about social perceptions, attitudes and practices (Corman 2011; DeMello 2012; Whittaker, Vaske & Manfredo 2006).

Raccoons are the epitome of the non-human urban dweller, and therefore are an apt example of our complicated relationship with nature as cities grow. Perceptions and attitudes shape human-raccoon relationships. To understand the perceptions and attitudes held by individuals on any topic, it seems logical to analyze the words they use to describe it. Understanding that discourse operates to reinforce meaning we assign to our surroundings (Corman, 2011; Waldeau 2013), this study explores the words people use to describe their encounters with raccoons and generates a theory about the nature of that discourse and how it

reflects on human identity and relationships with raccoons and how these attitudes concerning raccoons are applied to inferences at the societal scale.

Statement of Research Inquiry

This paper explores how the volume of calls to Toronto Wildlife Centre (TWC) has changed over time across categories and how the reasons for the calls have changed over time. It will identify which words and phrases callers most frequently use to describe their encounters with raccoons in the General Toronto Area (GTA). The discussion considers an interpretation of the findings and its implications for individual and collective social perceptions and attitudes about the complicated relationship between humans and raccoons in urban environments. Exploring the prevailing and sometimes competing social constructs that inform perceptions and attitudes of human-raccoon encounters may or –more interestingly– may not reveal the reality of these same encounters. Namely, the social construction of risk does not necessarily reflect the reality of risk but rather reveals individual biases and prejudices towards raccoons and hypothetically others perceived as different from themselves. Therefore, deconstructing problematic notions across individuals and societies is important because of its overarching implications for the well-being of both human and other animal communities. Moreover, points of intervention for combating negative perceptions and attitudes held by individuals may elucidated through this research.

Organization of the Paper

This paper is divided into five chapters: Introduction, Literature Review, Research Methods, Results, and Discussion.

Chapter 1, the Introduction, provides an overview of anecdotes as depicted by the media of encounters between humans and raccoons in Toronto as documented by the media to illustrate

the ambivalence toward liminal raccoons among the public. Next, the statement of purpose introduces a brief overview of the research problem, followed by a statement of the research inquiry.

Chapter 2 presents a literature review containing a background of the common North American raccoon, including its the distribution, biology, ecology and behaviour, and ecosystem impacts. Additionally, twentieth century urbanization and how this societal shift has influenced the urban-wildland interface and human-raccoon relationships; the human dimensions of human-raccoon conflict management; a review of the lethal and non-lethal methods of urban raccoon management; human-raccoon encounters in urban areas; human dimensions research; and contemporary urban theory are discussed. Furthermore, an overview of theoretical foundations and conceptual frameworks are explored here. Topics of discussion include social cognition, social constructs and biases, discourse as constructive, and ideological conflict. Then, the methodologies underlying the research design, as well as information about the study area and demographics, are presented.

Chapter 3 is a description of research methods, which outlines the data sample, materials, and procedure followed. The data collection process and analytical process are discussed, including the stratification of the data, coding classification and assignment of value positions.

Chapter 4 details the results of the study. This section presents statistical findings and relationships among discourse trends within the data.

Chapter 5 presents a discussion on the findings of the data and research objectives divided into four segments. First, an interpretation of the findings is detailed. A discussion of the limitations of the study and future research recommendations follows next. Then social and

political recommendations are made. Followed by a discussion of the implications. Last, concluding remarks are stated.

CHAPTER 2: LITERATURE REVIEW

Chapter 2 is divided in three parts: background, theoretical foundations and conceptual frameworks, and research design and methodology. The background discusses the distribution, biology, ecology and behaviour, and ecosystem impacts of the common raccoon; twentieth century urbanization and how this societal shift has influenced the urban-wildland interface and human-raccoon relationships; the human dimensions of human-raccoon conflict management and the importance of integrating human dimensions into urban raccoon management; and a review of the lethal and non-lethal methods of urban raccoon management.

Following the literature review, theoretical foundations and conceptual frameworks address the sociology and psychology of urban human-raccoon encounters through ideas of social cognition, schemas and perception; social constructs of animals; and discourse.

Last, the methodology underpinning the research design is discussed; the research questions are stated; and a description of the study area and demographics is presented.

Background

Distribution and Biology of The Common Raccoon

Raccoon is the common name for any of the Western mammals representing the genus Procyon of the Carnivora family Procyonidae and mainly associated with the common raccoon, *P. lotor*. The "common raccoon," *P. lotor*, also most often known as "the raccoon" is the largest existing species of the procyonid family. Additionally, it the most widely distributed with a natural range from southern Canada to Panama, though new habitats that have recently been occupied aside from urban areas include northern portions of the four south-central Canadian provinces, mountain ranges, prairies, and coastal marshes. After a population eruption beginning

in the 1940s, the estimated number of raccoons in North America rose 15 to 20 times higher by the late 1980s than in the 1930s, when raccoons were comparatively rare (Zeveloff 2002).

Raccoons are a highly adaptable and resilient species and have developed unique characteristics enabling them to persist in a range of habitats and changing environmental conditions (Bateman & Fleming 2012). They were variously reported as living in and around cities from the turn of the twentieth century on, suggesting that they were early to exploit urbanizing habitats. Presently, raccoons are arguably the most widespread and abundant of all urban carnivores in North America (Hadidian et al. 2010).

Distribution outside North America. As a result of escapes and deliberate introductions in the mid-twentieth century, the raccoon can be found in various European and Asian countries. Raccoons have also been sighted in all the countries bordering Germany, which hosts the largest population outside North America (Hadidian et al. 2010).

Local Raccoon Density

Ontario. Rosatte et al. (2010) demonstrated that raccoon density varies throughout the landscape of Ontario. For southern Ontario, it is estimated that there are 3.4-13.6 individuals per square kilometre, depending on location area, with higher densities in more urbanized areas and lower densities in more rural areas (Rosatte 2000; Rosatte et al. 2010).

Toronto. Raccoon densities are higher in metropolitan Toronto than in rural habitats (Rosatte 2000). For Toronto, it is an estimated raccoon density of 15-20 per square kilometre (Rosatte & Lawson 2001). The abundance of food resources, denning sites, and high reproductive potential are thought to be contributing factors that led to considerable densities of raccoons in both urban and rural areas of southern Ontario (Rosatte 2000).

The highly adaptable nature of raccoons has led to their ability to thrive in urban environments. Raccoons find refuge in urban environments due to the lack of hunting pressure, minimal predators, adequate shelter, available water, and both natural and human supplemented food sources (Crooks et al. 2010; Fuller, DeStefano & Warren 2010; Prange et al. 2004). Urbanization, agricultural expansion, deliberate introductions, and the elimination of natural predators of the raccoon are thought to have caused this increase in abundance and distribution (Zeveloff 2002).

Biology of the Common Raccoon

Size and appearance. Raccoons are medium-sized mammalian carnivores. Including their tail, they usually are just less than three feet long. Adults typically range from 4 kg to 10 kg. The body size of raccoons and their climbing abilities allow them to access trash cans and dumpsters (Hadidian et al. 2010). A brown-black facial mask is sharply delimited from adjacent areas of whitish hair. This "bandit" mask and a tail with five to seven conspicuous brown-black rings that alternate with lighter hairs are characteristic. The pelage of the raccoon has a grizzled appearance, with colours varying from iron greyish to blackish, but perhaps with a brownish or reddish tinge. The feet of raccoons have five digits, though with no webbing between the digits, which is a condition unusual among carnivores. The claws are short, compressed and recurved but not retractile and their gait is semi-plantigrade to plantigrade. The soles of their feet are not haired and the hands are well-adapted for grasping and manipulating objects while the hind legs support the weight of the body (Lotze & Anderson 1979).

The largest size in raccoons corresponds to environmental conditions of colder temperatures, low primary productivity, northern latitudes, higher elevations, western longitudes, lower rainfall, and primarily prairie and oak-hickory vegetation with non-forest or non-forest and

oak-hickory forest. Smallest *P. lotor* correspond to opposite environmental conditions in areas of mangrove and southern mixed forest which includes primarily oak-hickory, oak- gum-cypress, and longleaf-slash pine. These associations suggest an ecogeographic interpretation of variation in raccoons. Predicts that larger size should be found in colder, drier locations (Kennedy & Lindsay 1984).

Vocalization. Raccoons produce a range of vocalizations including hisses, whistles, screams, growls, and snarls (Fleming 2012).

Diet and nutrition. Raccoons arguably have the most diverse diets of any carnivore (Gehrt 2004), and this has been important in their success in urban areas. Although it is classified as a carnivore, the raccoon is an omnivore because it eats both plants and animals (Lotze & Anderson 1979). Raccoons readily exploit refuse and other resources related to human activities. Raccoons are typically seen in picnic groves during nighttime tracking, and their exploitation of these resources affect their foraging and spatial patterns. Raccoons often spend most of the night in and around garbage cans, and feeding aggregations are common (Prange et al. 2004). Over the last 70 years or so, the number of raccoons has grown twenty times larger due to the availability of food as a result of urban sprawl and proximity to humans (Fleming 2012).

Reproduction. Raccoons are seasonal breeders, giving birth once a year and typically exhibiting birth peaks in early to late spring, with occasional fall litters suggested for late breeders or females who lost litters early in the season and conceived again. There is anecdotal information from wildlife rehabilitators that breeding and birth periods in urban areas are extending throughout the year, perhaps because urban microclimates mitigate extreme cold, as well as provide greater availability of food resources (Hadidian et al. 2010).

In Toronto, breeding occurs during late winter (February to March), with births occurring between April and June. In a comparison of urban, suburban, and rural raccoon populations, a higher number of juveniles relative to adult females are typically found at the urban and suburban sites, although the percentage of reproductive females is not found to differ among these areas, suggesting that either juvenile survival is higher in urban and suburban areas or that larger litters are produced (Hadidian et al. 2010).

In Ontario, litters average three to four for urban raccoons and four to five for raccoons in rural landscapes. In Scarborough, Ontario, during 1987 to 1993, raccoon density still averaged 12 per square kilometer, suggesting that reproductive compensation may have been occurring despite more than 20 percent of the raccoon population was removed annually, (Hadidian et al. 2010).

From the available data, it is hard to tell whether urban raccoons differ from their rural counterparts concerning basic reproductive parameters. The possibility that reproduction in urban areas might be more productive and only weakly seasonal, with mating and birth events spread out more evenly across the year, is intriguing and potentially significant from a wildlife conflict perspective, and it bears closer scrutiny (Hadidian et al. 2010).

Ecology and Behaviour of the Common Raccoon

Raccoons are among the most widespread and abundant medium-size mammal in North America. Despite our significantly artificial urban environments, raccoons have been exploiting urban spaces both vertically and horizontally since the turn of the twentieth century (Hadidian et al. 2010). In addition to being diet generalists, coupled with their nocturnal behavioural patterns, raccoons demonstrate diverse denning and refuge habits (O'Donnell & DeNicola 2006). They demonstrate extraordinary abilities like novel manipulation of objects and structures, problem-

solving, high fecundity and extending rearing habits. So, despite rapid changes to their natural habitat, these abilities perform in synergy to drive raccoons to their success and ultimate survival of the contemporary rural-urban shift (Hadidian et al. 2010). In combination with unrelenting urban sprawl into natural spaces, it is not surprising that encounters between humans and raccoons are increasing (Riley, Gehrt & Cypher 2010). For these reasons, it is difficult not to perceive raccoons as the epitome of the urban non-human animal.

Life expectancy. In areas where hunting and trapping pressure is low, raccoons may live as long as 16 years. Under normal conditions, however, the oldest raccoon will be no more than ten years of age, and although rare, sometimes 12 years of age (Boggess 1994; Bromley, Lochmiller & Chapman 1984).

Survival and mortality. A number of studies have focused on survival and mortality in urban raccoons, with general findings that may be true for other urban carnivores, too. Speculations that the absence of hunting and recreational or commercial trapping contributed to higher average survival than in rural areas, while episodic disease outbreaks might be a principal limiting factor in urban environments (Hadidian et al. 2010).

A number of diseases and parasites can reduce raccoon numbers. Canine distemper and pneumonia are important raccoon diseases. High raccoon densities permit the rapid spread of these diseases, resulting in local die-offs. Disease has long been suggested as a limiting factor for raccoon populations, and the logic that associates higher population densities with a higher likelihood of disease transmission is suggestive (Gehrt 2004).

Rosatte (2000) concluded that neither disease nor human intervention had long-term, significant consequences for raccoon populations in Ontario because even following high population reduction, densities returned to pre-control levels within a year. The limiting effect of

diseases, their periodicity, and the interrelationship between diseases and other mortality factors suggest a complex set of factors may be mediating raccoon survival in urban habitats (Hadidian et al. 2010).

Sources of mortality in Toronto include euthanasia, vehicles, attacks by dogs, and diseases such as canine distemper and canine parvovirus (Rosatte 2000). Although some studies have reported survival estimates for adult raccoons in urban environments, no study has reported survival estimates for juveniles immediately following their emergence from natal dens (Hadidian et al. 2010). There may be substantial differences in vulnerability to disease, predators, or traffic during this critical period, but unfortunately, juveniles are typically too small to radio-collar during that time. However, road kills data suggests that juveniles may be particularly susceptible to cars during the summer of early all of their birth year (Hadidian et al. 2010).

Winter adaptations. Raccoons are active year-round. Although they do not hibernate, they do store up fat, are less active, and live in dens most of the winter (Fleming 2012; Lotze & Anderson 1979).

Habitat. The habitat of a raccoon must provide the essentials of life, namely food, cover, and water. The maximum number of raccoons in an area (carrying capacity) depends on the quality and extent of the habitat (Bromley, Lochmiller & Chapman 1984).

Studies of raccoons in both urban and nonurban habitats indicate they have a positive association with tree cover and water. Among natural habitats, raccoons generally select mature deciduous woodlands that are near permanent sources of water. For urban areas, it is important to understand the extent to which habitat use falls out between developed versus more natural zones (Hadidian et al. 2010).

Several studies in the Toronto metropolitan area indicate that raccoon use of urban landscapes is preferential toward forested parks and residential areas. Detailed habitat analyses in urban, in suburban, and in rural study sites in the Chicago metropolitan area support the prediction that raccoon foraging is strongly influenced by the distribution and abundance of human-related food in urban areas (Hadidian et al. 2010; Prange et al., 2004). Moreover, many raccoons appear to focus their activity around developed sites (e.g., picnic areas) rather than on the more natural habitat available to them (Hadidian et al. 2010).

There is a positive association between high-density populations and smaller range areas. This is linked to the distribution and quality of essential resources, particularly food and dens (Hadidian et al. 2010; Prange et al., 2004). Raccoons use dens of different types based on their availability (Hadidian et al. 2010). O'Donnell and DeNicola (2006) argue for what might be called learned tradition, a termed used to refer to the observed tendency for raccoons that had used human structures to exhibit similar preference upon displacement.

Although raccoon populations seem to reach higher average densities in urban areas than elsewhere, reported estimates have ranged widely across urban studies. Reported densities for urban populations vary but are still usually higher than in either natural or agricultural areas. In general, population data for urban raccoons strongly suggest that these habitats support higher population densities, but the determining factors behind these densities remain to be more precisely identified (Hadidian et al. 2010).

Water. Raccoons are rarely very far from water. Beyond drinking, streams, rivers, and swamps provide much of the raccoon's food (Gehrt 2004).

Activity and movement. For raccoons, home ranges in urban areas are relatively small in size, which is predictable given that both population size and home range size are influenced

by the distribution and quality of resources. Most estimates of home range sizes from a variety of systems and studies are from 50 to 300 ha (Gehrt 2004), and home ranges of urban raccoons typically fall within the 5-79 ha range (Rosatte et al. 1991).

The distribution and quality of artificial resources had a profound effect on the spatial pattern of raccoon home ranges. Many raccoons focus their nocturnal activity near picnic areas, and raccoon home ranges are more highly aggregate and more stable (concerning seasonal variation in size and shifts in activity centers) than in rural populations with more evanescent resources (Prange et al. 2004). It is typical during nocturnal radiotracking sessions to observe groups of 3 to 7 raccoons foraging nearby at a single picnic area. Therefore, it appears that use of these resources is not temporally partitioned and that urban raccoons are relatively socially tolerant (Prange et al. 2004).

Rosatte and MacInnes (1989) found that no raccoons attempt to return to their point of capture and are vulnerable to a 50 percent mortality rate within the first three months when captured in metropolitan Toronto. Mosillo et al. (1999) found no differences in mortality among three groups: animals trapped in urban areas and translocated to a rural area (urban); animals trapped from a wooded area and translocated to rural forests (rural); and animals trapped and released within the same rural forest (forest). The forest group tended to stay in the release area; the other two engaged in more extensive movements (Hadidian et al. 2010). The response of raccoons to translocation can be varied and undoubtedly depends on various influences, ranging from time of year to age, sex, and experience of the individuals moved, as well as other factors (Hadidian et al. 2010).

Intelligence. Raccoons continuously demonstrate high functioning capabilities in memory and problem-solving tasks. In one study, raccoons were able to open 11 of 13 complex

locks in fewer than ten attempts and exhibited no issues with repeating the task when the locks were rearranged or turned upside down. The researchers of this study concluded they understood the abstract principles of the locking mechanisms. Moreover, their learning speed was equivalent to that of rhesus macaques (Davis 1907; Pettit 2010a). In other research examining density of neurons in the cerebral cortex, a neuroanatomical indicator of intelligence, it was determined that raccoons are comparable to primates (Jardim-Messeder et al. 2017).

Neuroplasticity. Raccoons in urban environments appear to be smarter than their rural-dwelling counterparts. Indeed, the urban environment is thought to have contributed to their intelligence and resulting success. Cities provide mechanisms for learning, offering a flurry of activities and challenges. Consequently, cities as hubs for learning in combination with their notorious bold behaviour, urban raccoons are constantly testing their intelligence and becoming smarter (Fleming 2012).

Behaviour and cultural inheritance. Behavioural plasticity is an essential characteristic for adapting to urban landscapes, and learned behaviour may be passed onto future generations in some of these species. However, this arena has received little attention from some researchers, and much of what follows is relatively speculative. Cultural inheritance may help explain why some raccoons are more "urbanized" than others (Gehrt 2004). Hadidian et al. (1991) describes discrete choices among individual raccoons for types of diurnal rest sites in an urban area. Results indicate that some raccoons exclusively select buildings for rest sites, whereas others restrict their use to "natural" dens within a park. This study suggests that individual raccoons may differ in their preference for anthropogenic resources, including den sites, within urban landscapes. Young raccoons maintain familial relationships for nearly a year until their mother comes into estrus and are thought to go on to reproduce the behaviours learned from the mother

during the rearing period (Gehrt 2004).

Interactions with other species. Raccoons are one species implicated in the phenomenon of "mesopredator release," in which the removal of a top predator (e.g., coyotes) would allow the release of mesopredators such as raccoons and domestic cats, with consequent impact on prey species (e.g. songbirds) on which mesopredators may have had a limiting effect. However, the effect of coyote presence is not significant for raccoons. These outcomes suggest that interrelationships between raccoons and potential prey species are complex, which is not surprising given that raccoons are generalist carnivores rather than obligate predators (Hadidian et al. 2010).

Ecosystem impacts. Raccoons in urbanized areas represent reservoirs of diseases and parasites that may affect humans and domestic animals, as well as other species. One of the most critical zoonoses (diseases transmittable from animals to humans) worldwide is rabies, and all three species are potential hosts of the virus. Raccoon rabies swept across the Atlantic Coast during the 1980s and 1990s and represents one of the most important wildlife diseases in the United States (Gehrt 2004; Lotze & Anderson 1979; Rosatte et al. 2010).

Leptospirosis is another enzootic disease in many raccoon populations, and raccoons have been implicated in human outbreaks of Leptospirosis interrogans; L. pomona; and L. autumnalis. Additional pathogens frequently associated with raccoons that have important implications for people and domestic animals include pseudorabies; toxoplasmosis; distemper; and among macroparasites, the raccoon roundworm Baylisascaris procyonis. Though rarely such occurrences extend to people (Rosatte et al. 2010).

Human Settlement and Twentieth Century Urbanization

For the first time in history, the majority of the human population resides within urban areas. This marked shift from rural to urban dwelling among humans has founded *Homo sapiens* as a predominantly urban species (Bateman & Fleming 2012; Gehrt 2010). As this shift occurred, recognition of urban environments as legitimate ecosystems became increasingly widespread among academics, ecologists and social scientists (Gehrt 2010).

When addressing how human dimensions influence wildlife management scenarios, it is important to consider the historical evolution of perceptions towards wildlands and wildlife. Urbanization was propelled by the notion that "empty" land was being transformed into "improved land" for its "highest and best use" through human "development" technologies. This notion fails to realize that wildlands are not in fact "empty," that "improved land" is actually degraded in its quality, and that "development" really means denaturalization of the landscape. Therefore, the logic held by proponents of contemporary urbanization suggests that society predominantly perceives wildlife as commodities for use and consumption (Wolch, West & Gaines 1995).

Urbanization. Human influence has become increasingly pervasive as the drive for urbanization of landscapes across the globe continues at the expense of natural habitat. Human development (e.g. urbanization) is arguably the most influential factor affecting all existing life on Earth (Sanderson et al., 2002). Despite an estimated 80 percent of the world's population inhabiting densely populated areas (Ellis & Ramankutty 2008), the implications of human behaviour and its far-reaching effects are largely lost on the general population (Sanderson et al. 2002). Sanderson et al. (2002) argues that this is because humans have yet to recognize the cumulative impact of human behaviours upon the natural environment, and its subsequent

compromised ability to support diverse wildlife required for vital ecosystem services (Sanderson et al. 2002).

The normalization of increasing anthropogenic impact upon natural systems is especially problematic in urban environments, which depend on biodiversity much like any other environment does. Supporting urban biodiversity is essential for ecosystem services, including purification of air and water, and aesthetic value. Furthermore, the presence of urban wildlife biodiversity facilitates environmental education among an increasingly urban population of people (McKinney 2008).

Urbanization inevitably impacts the habitat of wildlife species, both directly and indirectly (Bjerke and Østdahl 2015; Horvoka 2008; Kellert, 1984; Patterson, Montag and Williams 2003; Rosatte & MacInnes 1989). The consequences of urbanization for wildlife are whether or not the species will be able to survive following the alteration of its habitat. Moreover, it is important to note that urbanization does not have a uniform impact among all species. For example, wildlife such as house sparrows and raccoons have a robust presence in urban areas because of their ability to leverage different feeding and nesting opportunities provided by anthropogenic infrastructure. Meanwhile, other species must evacuate when confronted by urbanization because their habitat requirements are inadequate (Theobald, Miller & Hobbs 1997).

McKinney (2008) highlights the challenges for understanding the effects of urbanization upon biodiversity. Although the author notes that urbanization is a critical driving factor of native species extinction, he also recognizes that urbanization can increase abundance among non-native ("generalist") species as they replace disappearing native species. The complexity of urbanization upon wildlife in local environments has severe and complicated effects for

biodiversity. For example, the cascading biological, social and political results that unfolds when species are successful to adapt and thrive in response to human-dominated landscapes (McKinney 2008).

Environmental homogenization. The intersection between population density and urbanization is a fundamental driver of human encounters with other animals (Patterson, Montag and Williams 2003). Although the process of urbanization systematically drives many species to withdraw into reduced ranges, some species manage to successfully adapt and thrive within close proximity to humans and their associated anthropogenic structures (Bateman & Fleming 2012). Moreover, recent studies depict that stakeholders' increasing interest in wildlife inhabiting urban areas mirrors current trends of accelerating urbanization (Ditchkoff, Saalfeld & Gibson 2006; Gehrt 2010; Magle et al. 2012). With increasing human modification of natural landscapes and subsequent deterioration of diverse habitat for wildlife species, biotic communities within human-dominated environments become largely homogenized (Gehrt 2010; Magle et al. 2012).

The urban environment hosts the complex relationships between land, development (i.e. urbanization) and human/non-human species (Gehrt 2010). The demands for urban development parallel the unprecedented and exponential growth of the global human population. The effects of increasing urbanization of the natural environment are undoubtedly profound with a myriad of consequences for other species. Notably, natural landscapes become increasingly fragmented, isolated and degraded. As a result, biodiversity declines and communities of species become simplified and homogenized (Gehrt 2010; Magle et al. 2012).

Gehrt (2010) suggests that one of the most visible impacts of urbanization is that some animals that would otherwise be present are noticeably absent from the matrix while others simultaneously appear more common. Therefore, the fauna of the urban space becomes

homogenized. Moreover, these observations are particularly accurate for other-than-human mammals. In this way, contemporary urbanization operates within a zero-sum framework whereby humans endlessly pursue contemporary notions of progress at the expense of other-than-human animals (Bateman & Fleming 2012). Though many animals have actively withdrawn into reduced ranges of habitat, some animals appear to benefit from their association with humans and urban spaces. Synanthropic species are urban exploiters and as such have successfully managed to leverage distinctive urban features in ways that often facilitate their population growth beyond their rural counterparts (Bateman & Fleming 2012).

Habitat fragmentation. As we know, the effects of urban development are cascading and far-reaching. Consequences of urbanization include, but are not limited to, habitat loss and fragmentation, which critically alter the structure and composition of ecosystems that exist within the affected area. Wildlife within increasingly urbanized environments exhibit varying responses to human development (Garden et al. 2006). Depending on the life-history attributes, sensitivities to environmental disturbances, interspecies interactions and dispersal ability of a particular species, some may be unable to respond and adapt successfully in an urban environment (Garden et al. 2006; Wolch, West & Gaines 1995) while others may not only succeed but also thrive (Garden et al. 2006; Magle et al. 2012).

Therefore, the urban ecosystem comprises the dynamic interplay between human-driven progress, landscape, and human/non-human animal encounters. Expanding upon this, urban systems are not unlike traditional ecosystems in that both contain abiotic and biotic factors. However, its ever-prominent anthroposphere, which comprises anthropocentric social and political phenomena, differentiates urban ecosystems from the rest. Though all spheres interact with each other to varying degrees, the anthroposphere is theoretically conceived to have the

most substantial overlap with abiotic and biotic spheres, thereby having the most considerable influence upon the system in relation to its adjacent counterparts (Gehrt 2010).

Urban food sources and nutrition. Urban settings provide reliable, non-seasonal food and water resources, reduced threat of natural predators and hospitable physical environments (e.g. temperature, shelter, and so on) to wildlife that can tolerate anthropogenic environments. For example, not unlike other mesopredators, raccoons readily exploit anthropogenic structures (e.g. chimneys, garbage bins, and so on) for denning and foraging purposes (Bateman & Fleming 2012). Such generalist traits in their behavioural plasticity, social ecology and dietary characteristics suggest that these wildlife species will succeed and thrive in urbanized environments (Bateman & Fleming 2012; Garden et al. 2006).

Urban habitat. As discussed, urban-adapted mesopredators often readily exploit anthropogenic structures for desirable habitat. Moreover, these species forage on a wide range of food resources, including human refuse, crops, rodents and birds, pets, road-kill and food provided via direct and indirect feeding from humans. Therefore, it is not surprising that urban-adapted wildlife experience greater food security and nutrition than their rural counterparts. Furthermore, the easy accessibility of food thereby eliminating the need for cooperative hunting behaviour coupled with the high-energy content of anthropogenic sources contributes to the increased success of some wildlife species. Accordingly, these findings further support that species require a number of generalist traits to successfully exploit urban environments (Bateman & Fleming 2012).

Urban mortality. Threats to urban wildlife vary from their rural counterparts. For example, road accidents account for 31percent of mortality among urban raccoons, followed by hunting and destruction (i.e. euthanasia). Other threats unique to urban environments are

suspected to include pollutants and poisons, which may or may not have been intended for the dead wildlife. Additionally, disease has been recorded as a significant cause for some urban wildlife dwellers. For example, disease accounts for approximately 50 percent of deaths for urban raccoons. In contrast, disease only accounts for about 19 percent of deaths for rural raccoons (Bateman & Fleming 2012; Magle et al. 2012; Prange, Gehrt & Wiggers 2004).

Human-wildlife conflict. Not surprisingly, animals that adapt best to living among humans – the most flexible, bold and clever – are exactly the ones that humans describe the most conflict with (Fleming 2012). Human-raccoon conflict may occur as a result of direct or indirect feeding from human sources, available shelter for nesting or refuge, and badly designed or poorly maintained structures that allow for wildlife access. The Humane Society and animal control departments in the City of Toronto each year handle thousands of human-raccoon conflicts in accordance with these trends (Rosatte & MacInnes, 1989).

Wildlife Management

Responsibility for the management of urban raccoons is fragmented across municipal, state, provincial, and federal agencies and spans a continuum from localized control of problems caused by individual raccoons to population management at a landscape level (Hadidian et al. 2010).

Approaches to reduce conflict, some more controversial or complex than others, include euthanization, translocation, exclusion, fertility measures, and prevention methods to reduce opportunities for conflict (i.e. the design of predator-proof garbage containers [Rosatte & MacInnes, 1989; Warburton & Norton, 2009]). Social attitudes towards various wildlife species significantly impact how wildlife control operators manage instances of human-wildlife conflict (Rosatte & MacInnes, 1989). Many state or provincial agencies responsible for administering

laws and policies for wildlife management have established nuisance wildlife control operator (NWCO) programs (Bluett, Hubert & Miller, 2010; O'Donnell & DeNicola, 2006).

Lethal Methods of Raccoon Management

Selective cull. Significantly, as yet virtually nothing is known about the ecological or demographic consequences of control activities, leaving as speculation whether these solve problems, mitigate or exacerbate "nuisance" activities, control or amplify the potential transmission of disease, or stabilize or destabilize wildlife community interactions and relationships. However, destroying them may not work. In Poland, the raccoon was officially declared a game animal in 2004, but this has not been sufficient to stem the expansion of the animal, especially in urban areas (Hadidian et al. 2010).

Trap and euthanize. Euthanasia remains the most controversial method of human-raccoon conflict management. Raccoons may be trapped as "nuisance" animals throughout North America, despite being protected under other circumstances by laws regulating the taking of fur-bearing animals. Typically, local wildlife agencies do not report data reflecting the magnitude of such control activity. Where data exist, it suggests that impacts can be great. Rosatte (2000) reported that "thousands" of raccoons were euthanized in Toronto each year because of nuisance situations. No estimates exist of the numbers of raccoons trapped by the by the public, but it is probably as high or higher than trapping conducted by other interests (Hadidian et al. 2010).

Non-lethal Methods of Raccoon Management

Habitat modification. Interestingly, wildlife management agencies have observed that destroying a nuisance raccoon may be ineffective as evidence suggests that when a niche is left open, it is quickly filled with in-migrating raccoons (Kellert 1984; Wolch, West & Gaines 1995). Therefore, popular advice given by wildlife management agencies is that homeowners make

their environment less attractive or less accessible to local wildlife by removing obvious sources of food and entry points around the premises (Boggess 1994). This strategy reflects a broader model in which educating the public on how to live with abundant urban wildlife is a part of the solution (Kellert 1984; Wolch, West & Gaines 1995).

Public education. Stakeholders lack alternatives to traditional and kill-oriented animal management strategies to fulfill their goals. Therefore, implementing public education initiatives that promote co-existence with wildlife by influencing residents' attitudes and behaviours are desirable for wildlife agencies tasked with managing urban problems (Kellert 1984; Wolch, West & Gaines 1995). With that said, it is important to explicitly recognize that various activists, urban planners, landscape architects and urban designers are also stakeholders who have a strong influence upon wildlife management actions in urban environments. Not surprisingly, numerous stakeholders present a vast array of values and perceptions towards urban wildlife species (Kellert 1984; Whittaker, Vaske & Manfredo 2006; Wolch, West & Gaines 1995).

Participatory planning. The participatory planning process seeks to manage attitudes held by diverse stakeholders through their continuous involvement in the management process (Treves et al. 2006). Treves et al. (2006) specifically suggest that participatory planning may improve perceptions towards projects, partners and outcomes, as well as towards wildlife itself (Treves et al. 2006; Wolch, West & Gaines 1995). Successful participatory planning facilitates stakeholders to appropriately adjust expectations, communicate roles, and delegate responsibilities clearly. Moreover, because interventions often underpinned by a shift in human behaviour, urban residents are more likely to adjust their attitudes and behaviours if they have identified the need for change and participated in the selection for the course of action themselves (Treves et al. 2006).

Prohibiting direct and indirect feeding. It is not uncommon for urban dwellers to regularly put out food for urban carnivores such as raccoons. Even if the food is not left deliberately, many wild carnivores, including raccoons, will regularly take dog or cat food left accessible. For example, in Zürich, when pet food was present in a fox stomach, it made up the majority of the stomach contents. With the high-energy content of anthropogenic food, one or two households leaving out food may have a significant effect on the foraging behaviour of these animals. Therefore, prohibiting direct and indirect feeding of raccoons should curb population density thus reducing the likelihood of a negative encounter (Bateman & Fleming 2012).

Trap and relocation. NWCOs often use translocation to resolve human-wildlife conflict whether or not permitted by law (Mosillo, Heske & Thompson), as it is a preferred approach among the public and animal advocacy groups (Smallidge & Taylor, 2012; Warburton & Norton, 2009). Translocation also has risks such as transmission of disease, habit-forming behaviours, negative impacts on ecosystems the problem species is released into, and conflict with resident raccoons (Dickens, Delehanty & Romero, 2010; Mosillo, Heske & Thompson, 1999; O'Donnell & DeNicola, 2006; Rosatte & MacInnes, 1989; Smallidge & Tator, 2012). Some municipalities have addressed a few of these issues. For example, a City of Toronto by-law restricts the release of wildlife to no further than one kilometre from site of capture, and in the event of wildlife inhabiting a human structure, the pest species is removed and the point of entry is sealed to prevent future access by wildlife (Policy Division, M. of N. R., 2011).

Reproductive inhibitors and sterilization. Reproductive inhibitors and sterilization are not widely applied to curb raccoon populations due to its cost and labour requirements. Thus, the adverse effects of translocating large numbers of animals on wildlife and human residents of rural areas near release sites must be weighed against the negative public opinion and ethical

considerations concerning euthanasia or sterilization when determining policy for the disposition of nuisance wildlife (Mosillo, Heske & Thompson 1999).

Stakeholder acceptance. The challenge posed to urban wildlife agencies is complex, but it also provides an educational opportunity to facilitate a better understanding of their relationship with wildlife among urban residents (DeStefano & DeGraaf 2003). Studies suggest that facilitation of a better understanding held by individuals towards wildlife precedes the success of management outcomes; if stakeholders feel satisfied in their participation during the decision-making process, they are more likely to accept the management outcome. Therefore, stakeholder acceptance of management actions is greatest when participatory planning is actively pursued by wildlife management agencies (Treves et al. 2006).

Human Dimensions Research

Since the 1970s, interest in the influence of human dimensions upon wildlife scenarios has increased among researchers and professionals within the field (Decker & Enck 1996; DeStafano & DeGraaf 2003; Gehrt 2010; Loker, Decker & Schwager 1999). Human dimensions encompass the challenges associated with identifying and understanding perspectives of wildlife management issues held by stakeholders, as well as effectively incorporating the gathered insight into the decision-making process. Of mounting consideration into the discourse is the incorporation of perspectives held by urban and suburban residents, which are increasingly demanding relief from nuisance wildlife scenarios (Decker & Enck 1996).

Previous studies of human attitudes towards urban wildlife yield a wide range of results. Ellis and Ramankutty (2008) and Sanderson et al. (2002) state that human influence upon the natural environment is becoming increasingly widespread. Virtually the entire terrestrial biosphere has been impacted by human activities, and subsequently, researchers argue that

human influence and nature are impossibly inseparable. The severity of the evidence supporting this statement is uncharacteristic of any other species on the planet. Consequently, the actions of humans have consequently impacted other non-human animals in unprecedented ways (Ellis & Ramankutty, 2008).

The history of carnivores and humans in North America has not been one of amicability or tolerance. Indeed, since European colonization of the continent, conflicts real or perceived have defined the relationship between many species and people. To some extent, this continues today within urban landscapes (Gehrt 2004).

Wildlife value orientations. Human dimensions undoubtedly influence interactions between humans and urban wildlife. Thus, human responses to some wildlife will vary depending on one's perception of a particular species (Fuller, DeStefano & Warren 2010). For example, some carnivores (e.g. mesopredators) elicit strong feelings in people. These feelings may range on a continuum from positive to negative, including fascination, admiration, fear and hate (Bateman & Fleming 2012).

To begin to understand the feelings and perceptions held by urban residents towards encountered wildlife, Fulton, Manfredo and Lipscomb (1996) suggest the theoretical concept of applying values, as it pertains to wildlife, to the study of human dimensions in wildlife management (Fulton, Manfredo & Lipscomb 1996). Values are derived from widely accepted beliefs about animals, as well as from the behaviour of the animals themselves (e.g. their destructiveness, charisma, ecological benefits, and so on). For example, negative values are typically more prominent when wildlife is more proximate, population density is high, and encounters are more frequent (Wolch, West & Gaines 1995).

Additionally, values towards wildlife are significantly shaped by historical and cultural perceptions of animals. For example, some urban wildlife species are perceived as dangerous or dirty (e.g. raccoons, coyotes, mice). The raccoon specifically has been the subject of human concern for its potential as a vector for canine distemper, feline leukemia and raccoon roundworm. Additionally, their notorious ability to exploit and cause damage to human structures has influenced humans to perceive them as a nuisance. Therefore, raccoons have become an essential subject for wildlife management agencies, which encourage solutions where the nuisance animal is trapped, relocated or killed (Wolch, West & Gaines 1995).

Contemporary Urban Theory

The contemporary urban theory is problematic due to its anthropocentric perspective. Despite urbanization and its impacts sprawling into new frontiers, the absence of non-human animals from urban institutional thought and practice is clearly evident. Furthermore, the disregard for non-human animal life outside of their instrumental uses is interwoven throughout the history of urbanization. At the crux of urbanization, measured by its conquest of nature by culture, is the notion of progress. This conception of urbanization is ideologically/inherently/inevitably exclusionary of what is categorically "wild" (Wolch, West & Gaines 1995).

Beyond acknowledgement of non-human animals as both similar and dissimilar to humans, they are also friend and foe, amiable and inimical, and individualized and objectified in contemporary society (Fudge 2011). Moreover, the context of where animals are found influences how individuals and society perceive them. In practice, where animals are encountered determines how they will be treated. For example, captive animal vs. zoo animal (DeMello 2013).

Spatial legitimacy. At the crux of the relationship between humans and other mammals are the social processes that construct individual and collective social representations of the referent being, and additionally, its significance inherent of when we imbue other mammals with meanings. Influenced by socio-spatial dynamics, other-than-human mammals are representative of many things to different people, and at times, these representations may contradict one another across contexts (Corman 2011; DeMello 2012; Wieczorek Hudenko, Siemer & Decker 2010). Consequently, mammals such as raccoons become the target of a wide range of expressions upon encounters with humans. Moreover, human encounters with other mammals almost invariably objectify and thus create the potential for harm toward the other mammal in question (Luther 2013).

Studies suggest that this phenomenon especially impacts liminal mammals, like raccoons, inhabiting urban spaces. Wieczorek et al. (2010) suggest that negative attitudes toward liminal mammals parallel increasingly integrating habitats. In one study, negative attitudes peaked when human settlement first intersected the habitat of liminal species. However, negative attitudes appeared to decline over time as experience with the referent species increased. From this study, Wieczorek et al. suggest that the reduction of negative attitudes toward liminal species may positively influence the acceptance capacity for the species of concern (Wieczorek Hudenko, Siemer & Decker 2010).

In Germany, where raccoons were released in the 1930s, it was reported that 100 percent of residents in one village were aware of their presence, and 76 percent had raccoons using their properties. However, 89 percent did not consider raccoons a nuisance, even though 33 percent believed raccoons raided garbage cans, and 52 percent attributed losses from fruit trees to raccoons (Hadidian et al. 2010).

Some articles attest to the highly negative sentiments that these animals can sometimes evoke. Because raccoons make ready use of human structures for den sites and often get into poorly managed trash, they are considered a top concern among urban wildlife species for causing conflicts with humans. If raccoons are estimated to cause approximately 60 percent of all wildlife damage, then their total economic impact on North America would be significant indeed (Hadidian et al. 2010).

Wildlife acceptance capacity. Wieczorek et al. (2010) propose that wildlife acceptance capacity is likely influenced by myriad variables including – though not limited to – risk perceptions, beliefs and attitudes toward a species, socio-demographic traits (e.g. gender, age, education, and so on), perceived impacts (i.e. positive or negative) imposed by the species, and attitudes about management. Moreover, research reveals that diverse acceptance capacities are particularly prevalent in cities. Specifically, studies show a wide range of conflicting ideologies among human residents regarding the acceptance and tolerance of mid-to-large sized mammals. Further complicating our understanding of wildlife acceptance capacities, Wieczorek et al. (2010) note that while some research supports the belief that acceptance capacity for proximate non-human mammals increases with exposure, other studies suggest that acceptance capacities may remain static or even decline as experience accumulates. Wieczorek et al. (2010) conclude that it could be that social acceptance of liminal mammals declines over time as a result of conflict.

Risk perception. Other-than-human mammals found in urban spaces are often marked by human ambivalence and complexity (Corman 2011). To foster further understanding of this social phenomenon, individual and collective construction of risk perception becomes an integral component in the analysis of human responses to encounters with other mammals (Carpenter,

Decker & Lipscomb 2000; Kellert 1984; Wieczorek Hudenko, Siemer & Decker 2010; Wolch, West & Gaines 1995). Wieczorek et al. (2010) theorize that risk perception is a crucial determinate of acceptance capacity variables. For example, if the perception of control does not increase with experience, then the feeling of a lack of control escalates. Subsequently, this may lead to lower acceptance of certain liminal mammals (Kellert 1984; Wolch, West & Gaines 1995).

Management implications. The emergence of what Patterson, Montag and Williams (2003) discuss as changes in the socio-cultural landscape is among the new challenges for wildlife posed by urbanization. That is, the complexities of increasing urbanization transcend physical landscapes and fundamentally change the ways in which humans assign the meanings for wildlife (Patterson, Montag and Williams 2003). Patterson, Montag and Williams (2003) assert that attitudes held by humans in urban environments depict more highly individualized emotional and symbolic values in comparison to attitudes held by humans in rural areas, thus further complicating the relationship between people and wildlife in cities.

These findings support the proposition that the meanings of animals are more a construct of culture and human consciousness than its biology (Patterson, Montag and Williams 2003). Therefore, human attitudes towards urban wildlife species may vary drastically among individuals based on variables such as which species is of concern, personal experience with a particular species, as well as demographic data including age, gender, ethnicity, and level of education (Bjerke and Østdahl, 2015; Kellert, 1984; Patterson, Montag and Williams 2003).

In a study of the attitudes of humans towards urban wildlife by Kellert (1984), significant differences among varying urban population areas were found. Mainly, social characteristics of the respondents were found to be significant predictors of urban wildlife interest and attitude.

The general results of this study revealed varying attitudes across gender, age, level of education, ethnicity, and status. Notably, data from respondents revealed that the urban population studied was primarily concerned with domestic pet animals, whereas the attitudes held by respondents in suburban areas exhibited a greater appreciation for wildlife. The author of this study contends that the public would benefit from environmental awareness education and therefore recommends the implementation of such programs (Kellert 1984).

Similar to the study conducted by Kellert (1984), Bjerke and Østdahl (2015) surveyed human attitudes towards urban wildlife. Their findings indicate that individuals most appreciate small birds, squirrels, butterflies, hedgehogs, ducks, geese, and dogs. Conversely, results indicate that individuals most dislike bats, snails, invertebrate species, mice and rats. Furthermore, this study considers the influences of gender, age, and level of education upon attitudes towards urban wildlife (Bjerke and Østdahl 2015).

Interestingly, level of education appears to be an influencing factor that can foster increased positive attitudes for most species. The results of this study are relevant because they indicate that the presence of wildlife in urban environments plays an integral role in shaping human behaviours, thus emphasizing the significance of public awareness education to effectively and appropriately inform social attitudes (Bjerke and Østdahl 2015). These findings support the potential for public education to foster positive relationships between humans and urban wildlife through shaping attitudes (Bjerke and Østdahl 2015; Kretser et al. 2009; Patterson, Montag and Williams 2003)

The importance of shaping human social attitudes towards urban wildlife is emphasized in Kretser et al. (2009). This study found that overall attitudes towards wildlife encounters were more positive than attitudes of individuals resulting from experiences with a specific species

encountered near a respondent's dwelling. Individuals who have experienced a nuisance encounter exhibited less desire to support conservation of wildlife (Kretser, et al. 2009), which may be a common experience for many individuals living in urban areas due to their close proximity to wildlife that rely either directly or indirectly on anthropogenic infrastructure (Theobald, Miller & Hobbs 1997).

Similarly, in a study conducted by McCance (2009) that found people generally seem to prefer non-lethal methods of wildlife management discovered that if an individual has experienced direct conflict, it is more likely lethal measures are condoned by the individual. Moreover, statistical differences in attitudes toward management measures among men and women were apparent. Therefore, future research should consider the impact of gender when analyzing the human dimensions of human-wildlife encounters (McCance 2009).

The results of McCance (2009) support the notion that urban perspectives on wildlife tend to be highly individualized, underpinned by emotional and symbolic values (Patterson, Montag & Williams 2003). For this reason, managing wildlife in urban environments demands novel strategies that respect the human dimensions that contribute to human-wildlife encounters in cities. Specifically, the increased diversity in values and meanings that drive social conflicts concerning wildlife management strategies while simultaneously revealing politically and socially acceptable solutions (Patterson, Montag & Williams 2003). Like Kellert (1984), Krester et al. (2009) and McCance (2009), the author of this study recommends social intervention to support positive relationships between humans and urban wildlife via public education (Patterson, Montag & Williams 2003).

Moreover, it is useful to acknowledge how population density serves as a critical indicator for human-wildlife encounters. As ecosystems become increasingly manipulated by

urbanization, the interaction between humans and wildlife inevitably increases even though natural habitat and biodiversity have decreased. The effects of urbanization and its subsequent population growth provide the foundation for human-adaptable species such as raccoons, squirrels and skunks to thrive, and therefore increase the likelihood of human-wildlife encounters in urban settings (Krester et al. 2008; McKinney 2006).

Wildlife managers of human-wildlife encounters increasingly recognize the importance of human dimensions when developing effective management strategies. However, understanding the human dimensions of such situations is notoriously difficult to understand and manage. Historically, scientific expertise in the biological and ecological dimensions of human-wildlife interaction dominated management strategies. Such dimensions are often quantitative in nature, unlike human dimensions that beg for a qualitative methodology. Notwithstanding the complexities that are inherently possessed within human dimensions of research, wildlife managers increasingly recognize that a scientifically based understanding of people is a vital component of the management process (Decker & Chase 1997).

Theoretical Foundations and Conceptual Frameworks

Social Cognition

Social cognition theorizes how humans process, store, and apply information about other humans and social situations to illuminate the processes that underlie the understanding of social psychological phenomena. More specifically, this ideology focuses on the role of cognitive processes in social interactions with conspecifics as well as across species. This approach considers the processes involved in the perception, judgement, and memory of social stimuli, as well as the effects of social and affective factors that influence information processing, and the behavioural and interpersonal consequences of cognitive processes (Frith & Blakemore 2006).

Social cognition is, in other words, the study of social knowledge, social structure, group behaviour, social influence, processing biases, whether and how social category (sex, age, race, and so on) defines people, stereotyping, memory for social information, and attribution of motives. Research of this nature has generated insight into a better understanding of social phenomena such as prejudice, peer pressure and group behaviour (Frith & Blakemore 2006).

Schema theory. Social schemas are the product of cultural constructs implanted in memory. Schema theory describes how ideas or concepts are represented and categorized in the human mind. According to this view, a mental representation (i.e. schema) is "activated" upon the sight or thought of a concept, triggering the memory of other information that is linked to the concept by association. This activation often takes place unconsciously. Subsequently, judgements are derived from information outside what is actually available because many of the associations the schema elicits extend beyond the given information. This is thought to influence social cognition and behaviour irrespective of whether these judgements are accurate or not. Therefore, if an individual encounters a raccoon then a "raccoon schema" may be activated. Subsequently, the raccoon may invoke either a positive or negative sentiment rooted in past experiences that we remember and consider important (McVee, Dunsmore, Gavelek 2005).

Cultural differences. If schemas are derived from cultural constructs, then it is important to consider the influence of culture on social cognition. While humans universally use schemas to interpret their social world, the content of the schemas is hinged upon cultural upbringing and therefore varies across individuals. This inevitably has implications for perceptions of human-raccoon encounters; a higher cultural value of raccoons would result in a more extensive schema, thus more harmonious coexistence (McVee, Dunsmore, Gavelek 2005), which may be evident in Germany where most of the population does not perceive the presence of raccoons as a nuisance

(Hadidian et al. 2010). Cultural differences have been found to shape some of the fundamental ways in which people automatically perceive and think about their environment (McVee, Dunsmore, Gavelek 2005).

Social perception. Social perception can be defined as a culturally-constructed process that seeks to understand the psychosocial dynamics that inform impressions of and make inferences about other beings. Humans derive perception of their encounters with others from the physical appearance, verbal, and non-verbal cues presented by the other entity. These cues may be in the form of facial expressions, tone, hand gestures, and body position or movement. Perception can be better understood as four main components: observation, attribution, integration, and communication (Aronson, Wilson, Akert & Sommers 2010).

Observation. Observations result from a dynamic interplay between persons, situations, and behaviour. Attribution, expressing an individual's personality as the source or cause of their behaviour during an event or situation, also influences an individual's perception. Observation and attribution then integrate to form a unified impression. To finally confirm these impressions, humans try to understand, find, and create information in the form of biases. Inevitably, social perception is shaped by an individual's motivations, emotions, and working memory. These elements in combination with one another determine how humans attribute certain traits and how those traits are interpreted, or in other words, perceived (Aronson, Wilson, Akert & Sommers 2010).

The physical influence. The processes of social perception start with recognizing others, situations, or behaviours in order to gather evidence to inform an initial impression (Kassin, Fein & Markus 2008). Perception is inevitably influenced by the physical characteristics of the other party. For example, some animals are implicitly more intimidating than others due to their size,

pitch, appearance, and so on (Wolch, West & Gaines 1995).

Context from prior experiences. Humans utilize the extent and depth of their past experiences with a similar event to predict the sequences or outcomes of a new event. The ability to anticipate the results of a situation also intersects with the cultural background of the individual because culture inevitably shapes experiences. Situational observations either lead humans to have notions about specific events or explain the causes of behaviours (Kassin, Fein & Markus 2008).

Nonverbal communication. Like verbal communication, nonverbal communication can convey emotions, attitudes and personalities. Other nonverbal cues including body language, eye contact, and vocal intonations can influence social perception by allowing for snap judgements from finding consistencies in events based only on narrow frames of experience (Aronson, Wilson, Akert & Sommers 2010).

Attribution. With observations drawn from others, situations, and behaviour, the next step is to make inferences in order to identify an individual's inner dispositions. The use of information obtained through observation to help individuals rationalize the drivers of one's own and others' behaviours (i.e. attribution) is a crucial element of social perception. People apply attributions to understand the world around them and to understand the distinct behaviours of others. When people create attributions, they enable themselves to make judgements about the cause or causes of a particular behaviour. This mode of thought seeks to make sense of how humans use information about the social environment to understand the behaviour of others (Fiske & Taylor 1991).

Inaccuracies and distortions. Humans are predisposed to various types of confirmation biases, tendencies to construe, find, and formulate social information in a fashion that validates

existing opinions. Preconceived prejudices, stereotypes, and discrimination (i.e. social biases) may contribute to these tendencies (Aronson, Wilson, Akert & Sommers 2010).

Defensive attribution hypothesis. The defense attribution hypothesis states that people tend to attribute more blame to the other actor of an incident, especially as the consequences increase in severity. However, the other actor may be thought of as less culpable as consequences become more severe if perceived as more similar characteristically or circumstantially. If the perceiver views the other actor as less similar, then the other actor is likely to be perceived as more culpable (Burger 1981). This cognitive process may reinforce negative perceptions of raccoons in the way that the public focuses blame on raccoons for breaching Toronto's Green Bin rather than on human behaviours and social constructs (Burger 1981; Corman 2011).

Belief perseverance and ingroup bias. Human cognition is vulnerable to belief perseverance, the tendency for individuals to hold false convictions even after they have been refuted (Aronson, Wilson, Akert & Sommers 2010). Another type of bias which may help explain human-raccoon social phenomena is "ingroup bias," the tendency for people to favour members of their own group and their actions over those of outsiders (Burger 1981).

Social Constructs of Animals

The constitution of an animal is invariably constructed through cultural knowledge and human cognizance. However, contemporary urbanization has incited transformations within the socio-cultural landscape that elicit significant deviations among meanings and values assigned to other-than-human animals. In turn, these evolving sentiments precipitate influence and information of social and political institutions and policies (Patterson, Montag & Williams 2003).

Animal ideologies. As Fudge (2004) argues, humans are challenged with interpreting the notion of animality. The challenge lies in that other-than-human animals are familiar to us in that they form social relationships with one another, yet they are simultaneously unknown to us, and so our complete understanding of other animals is impossible. This paradox of the same yet different is, in part, the attribute that most captivates our interest with them. Though contrasting perceptions of other-than-human animals persist within this paradigm, and at times, these animals become the target of negative sentiments driven by fear and disgust. Therefore, such human relationships with other animals logically present themselves as the problem of the human, as opposed to that of the animal (Fudge 2004).

Human relationships with other animals are rife with contradictions, and these inconsistencies constantly reveal themselves during their encounters. However, they often go unrealized in that we fail to recognize the likeness of the cat we live with and the raccoon foraging in our garbage bin. Moreover, it seems illogical that humans express kinship with some animals yet simultaneously malign and treat other animals as though they are inanimate bodies. However, we collectively evade the irony of our relationships with other animals, often shirking the contradictions naturalized and embedded within social thought and practice (Fudge 2004).

The interrelation between humans and nature is noticeably overlooked in both cultural discourse and social thought though animals are found without exception wherever humans live (DeMello 2013; Taylor 2013).

Perceptions, attitudes and behaviours. Questions of human agency with animals have been mostly absent from these debates. Humans shape the degree of attractiveness to other animals through their behaviour. Individual behaviours toward other animals are indicative of their underlying values, which then translate into specific attitudes. In this paradigm, values and

attitudes are rooted not only in systemically institutionalized beliefs about non-human animals, but also in the behaviour of non-human animals themselves. Specifically, their destructiveness to human property, their allure, and often less frequently, their ecological benefits (Wolch, West & Gaines 1995).

Increasing proximity and density between humans and other animals facilitate more frequent negative valuation by humans. Negative values result from costs imposed by other animals upon human property (i.e. structural damage, damage to vegetation or landscaping, and so on) and wellbeing (i.e. noise, odour, disease, injury, and so on). However, negative values also stem from historical and culturally rooted perceptions of other animals as dangerous or dirty, for example, the "big bad wolf" (Wolch, West & Gaines 1995) and "trash panda" (Chapin 2016).

The raccoon illustrates the case of an adaptive urban animal that has been the target of social criticism, propelled by concerns of injury and disease, thus encouraging the perception that raccoons are disease vectors to be controlled. Similarly, these animals may receive support from humans when they are perceived as beneficial to them. In this way, raccoons are viewed as amenities or as analogous to domestic pets (Wolch, West & Gaines 1995).

The problem with contemporary studies of non-human animals in urban spaces is that they often occur in response to human-perceived problems, if not for reasons relating to species endangerment or public salience, and are further exacerbated by the acceptance of urbanization as status quo rather than problematized in its endeavours. Therefore, challenging the principles that underpin contemporary urban studies through theoretical framework for understanding the impact of urbanization for animal life as it relates to patterns of human/non-human animal encounters in juxtaposition with temporal and spatial patterns, and its implications for science

and political economy, and transspecies urban thought shaped by both knowledge and sentiment. So over time, a shifting mosaic of landscapes and ethics excite an ever-evolving set of transspecies urban practices that, in turn, influence urbanization and human/non-human animal encounters (Wolch, West & Gaines 1995).

Urban-rural fallacy. Simply put, cities are artifacts yielded by constructs of human culture (Sabloff 2001). Despite the social fallacy that nature predominantly exists outside of urban spaces, other-than-human animals are often found within and are invariably affected by urban processes; though their responses to urbanization may differ across species (Crooks 2010; DeMello 2012; Waldau 2013). Without a doubt, some species are critically sensitive to the habitat changes that urban processes cast, while others manage to achieve unequivocal gains from the amenities provided in these manufactured places. These amenities, including ample availability of foodstuff – namely human refuse (i.e. trash), cultivated fruits and vegetables, food intended for domestic animals – and the cornucopia of human structures that inadvertently double in their purpose to provide shelter, as well as the fragmentation of habitat, which naturally owes asylum from apex predators, permits some other-than-human animals to move through and persist within the urban matrix in ways that many others cannot (Crooks et al. 2010).

Transspecies urban theory. Horvoka (2008) describes transspecies urban theory as a framework to help make better sense of human relationships with wildlife in urban environments. There is a shift from the widespread anthropocentric bias in contemporary urban theory that views humans as the primary agents in cities towards the understanding cities as complex and interactive environments shaped by human-nonhuman exchange processes. Therefore, urban environments are consciously recognized as neither social nor natural, but rather a combination of both (Horvoka 2008).

Transspecies urban theory requires humans to not only perceive wildlife as sentient beings but also to recognize them as significant actors in their own right. Therefore, transspecies urban theory attempts to redefine the utilitarian and anthropocentric conceptualizations of human-wildlife relationships that tend to dominate beliefs and attitudes held by humans. Conceptualizing wildlife as influential and significant actors in urban environments depicts cities as spaces of political-economic power, sociocultural difference, and places comprised by particular assemblages of animals, both human and nonhuman, that intermingle together (Horvoka 2008).

Discourse as Constructive

Discourse is not a mirror or representation of reality. Instead, discourse is dynamic and creative: it offers a version of reality, thereby imposing a particular structure on it. The production and interpretation of language are never neutral. Rather, language inextricably shapes and motivates human behaviour. Moreover, in producing and interpreting discourse language also makes use of, maintains and develops cultural ways of thinking and acting. This argument implies that the language we use for other-than-human mammals is socially constructed and influences how they are treated in human society (DeMello 2012; Hannigan 2014; Wolch, West & Gaines 1995). For example, words like “murder” and “execution” are normally reserved for discussions surrounding human death, and in contrast, words like “slaughter” or “euthanasia” are used to refer to the deaths of other-than-human mammals. The problem lies in that we use words routinely intended for animals (e.g. “slaughter”) to refer to human scenarios though its implications are different. To elucidate, the slaughter of a human strikingly suggests a brutal death whereas, in contrast, the slaughter of some other mammals is so normalized within society that the brutality suffered by these lives often go unrealized (DeMello 2012).

Moreover, our relationships with other mammals present the opportunity for humans to express ideas about identity. In other words, our depiction – as well as use – of other mammals reflects and remarks upon human society, values and practices (DeMello 2012). Therefore, it is necessary to explore the interplay of human dimensions during encounters with other mammals. We must aim to make sense of the broad spectrum of human sentiment toward liminal mammals. If we could understand what informs sentiment, then perhaps we could influence human/non-human animal relationships positively (Wieczorek et al. 2010).

Any ideological position that seeks to challenge contemporary relationships between humans and other animals must deconstruct how humans ghettoize and hierarchize other animals (Fudge 2014; Waldau 2013). While the sophisticated theory that describes the social construction of a variety of human others is established, similar scholarship dedicated to non-human animals is still relatively new (Corman 2011). Though, Fudge (2004) suggests that these constructions may be addressed through analysis of discourse, specifically through the dissection of dominant metaphorical structures as they relate to both human and animal others (Fudge 2004).

Illogical and ambivalent meanings attached to food, waste and urban foraging are intricately woven into dominant social constructs and the leave many questions unanswered. Moreover, contempt for non-human animals obscures the roots of anthropogenerated problems. Consequently, the displacement that cascades from this contempt mutually reinforces the continued vilification of entire groups of humans and non-human animals alike and obstructs recognition of the underlying hegemonic structure. Further, implications for more significant environmental issues emerge (Corman 2011).

Environmental crises lie within human problems of logic that are shaped by patriarchal social and cultural institutions. For example, the common belief that urban spaces should reflect

modernity and sanitation does not consider that trash, despite its symbolic association with dirt, is an invariable artifact of human settlement and capitalist systems. Therefore, it challenges natural and cultural aversions as it lingers at the periphery, continually threatening to trespass upon us. Similarly, raccoons, a key non-human urban resident, embody the inability of humans to contain, and therefore control, what society decidedly casts away under the guise of self-preservation and identity (Corman 2011).

From here, a way of making sense of and acting within urban spaces emerges through our lived relation with raccoons. By deconstructing our relationships with other animals –and ultimately with ourselves– we may make sense of human cognitions about and responses to encounters with other-than-human animals in urban spaces toward the purpose of building inclusive environments for all sentient beings. With the recognition of social and political issues as central undercurrents driving environmental issues, it only seems logical that humans now reflect upon strategies like these to confront contemporary environmental crises (Corman 2011; Hannigan 2014; Wieczorek Hudenko, Siemer & Decker 2010).

Individual conceptual constructs represent a vast array of abstract entities driven by the complexity of the human environment, especially in the intellectual realm. In cases where previous experience with the subject is limited, other ways of knowing about the subject, such as cultural and encyclopedic knowledge, play a more dominant role. At the same time, language, which is highly contingent upon metaphor and pre-established cognitive schemas, underpins the formation of these mental representations. While these subjects may be of abstract notions, such as love or democracy, or imaginary ideas like spirit or fairy, it pertains to superordinate categories (furniture, animal, and so on) as well. These concepts emerge in language as basic level terms and constitute linguistic meaning (Győri 2013).

Though through content analysis of language, research may generate knowledge that not only adds scholarship but also transcends the realm of wildlife management practices (DeMello 2012). A principled distinction is assumed between human and non-human animals within the discourse of human/non-human animal relationships. The assumed distinction between the human realm and that of the non-human animal realm (reflects the nature/culture divide) is a persistent theme in social thought/discourse (Fudge 2004).

Media. Raccoons seem to appeal to people at a number of levels. Raccoon young are popular pets. Wildlife rehabilitators often treat injured and orphaned raccoons. Dozens of popular books are based on or around raccoons, ranging from complete natural histories to entertaining stories about raccoons as pets, to children's books and television shows. The current invasion of raccoons in Japan is partly the result of a popular animated cartoon in the late 1970s, which prompted the importation of many raccoons and subsequent breeding for the pet market (Hadidian et al. 2010).

The intermediate status of raccoons is both constructed by and reflected in cultural representations. For instance, various media reproduces striking ambivalence toward raccoons, as they are paradoxically positioned as both endearing and unwelcome, often in the same frame. In this way, the media circularly primes and perpetuates perceptions of and attitudes toward liminal animals (Corman 2011; Wolch, West & Gaines 1995).

However, Wieczorek Hudenko, Siemer & Decker (2010) notes that some mass media research suggests that wildlife-related news is comprised mainly of negative encounters between humans and other-than-human animals and moreover, that reports of this nature may be more evident in urban than rural newspapers. Subsequently, risk perception among the public is

expected to rise, therefore making carnivore management more of a particular focus in urban areas (Wieczorek Hudenko, Siemer & Decker 2010).

In combination with media portrayals, negative valuations are also composed of historical and culturally rooted perceptions of other animals. For instance, perceptions of coyotes are dangerous. There's a weight of cultural expectation, bred in by stories and movies, where we think of darkness and fear when we hear howls. Perhaps one of the most widely-known examples is of the "big bad wolf" (Wolch, West & Gaines 1995). In the same way, unjust attributes are assigned to raccoons as illustrated by the nickname "trash panda" (Chapin 2012). Consequently, these non-human animals may be viewed as agents of counter-culture for their habitual destruction to human property and/or as looming vectors of disease, injury or death in spite of humans and their activities as the standing cause for what systemically precipitates pathogen changes in urban environments (Gehrt 2010; Wolch, West & Gaines 1995).

In contrast, an individual's experiences, which may occur through direct encounters as well as through vicarious experience filtered through social networks and the media (Wieczorek Hudenko, Siemer & Decker 2010), may frame liminal animals like raccoons as akin to companion animals, and are therefore valued for providing aesthetic sentiments and/or recreational prospects (Gehrt 2010; Luther 2013). Here, another problem of logic within contemporary social thought reveals itself: raccoons are simultaneously perceived as both symbols of nature and scourge in the way that they routinely transgress the boundaries between humanity and animality, further driving the environmental discourse that propagates the nature-culture divide and threatens the limit case of the moral order (Fudge 2004; Luther 2013; Wolch, West & Gaines 1995).

In any case, animals ultimately become the target of a wide range of expressions during encounters with humans. In practice, beliefs about how to manage population densities of raccoons are subject to two competing narratives: first, cruel acts toward animals pervert human civility and threaten the moral order, and second, expanding concerns about animal welfare undermines human superiority. Therefore, the narrative to which an individual or society subscribes to literally makes management decisions a matter of life or death for myriad animals that are not entirely unlike us in many ways (Luther 2013).

Discursive metaphors. Metaphors are an inescapable organizing structure that humans rely upon to imbue meaning and make sense of their lived experiences. The human mind inescapably delegates meaning through associations, often by relating an eminent domain of life to an apprehended but unknown or less-known domain. This practice where we make sense of what is strange to us through our known experiences is fundamental to human cognitive and behavioural practices, including our emotional experiences (DeMello 2012; Taylor 2013). Through rendering of sameness and difference in relation to ourselves, we imbue the lives of other animals with meaning, and in this way, what was unknown translates into what is now known via a metaphor. For other animals, metaphors provide an effective method of impregnating meaning through marrying ideas of two otherwise categorically different entities together. From this, a new way of recognizing an already existing animal has been created (Fudge 2004).

Evolving narratives. Other animals as sentient beings with intrinsic value are replaced by a metaphorical construction that both creates meaning and reminds humans of what is unknowable to them if one were to dissect the metaphorical structure. From this, social narratives are created from drawing upon cultural and individual histories to make sense of their lived

relation with others and subsequently, the "other" becomes whatever the interpreter wants it to be (DeMello 2012; Fudge 2004; Taylor 2013).

A metaphor, then, becomes an absent referent in which the animal is essentially removed from its appropriate context. The problem here is that the animal in question is barred from authentic recognition within the discursive framework (Fudge 2004; Hannigan 2014; Waldau 2013). In this way, absent referents expedite the naturalization of problematic metaphorical structures and further seek to not only obstruct the detection of inconsistencies embedded within the human/non-human animal interface but further impedes our understanding of encounters with other animals as well. Furthermore, the obscured understanding and malalignment of other-than-human animals has insidious and pervasive implications that reveal themselves in relationships among humans as well (Fudge 2004; Taylor 2013).

The problem of the metaphor. In any case, other-than-human animals fail to be recognized as complex and sentient individuals that are inherent of intrinsic value. Instead, the reality of their existence is replaced by a simple metaphorical construction. Furthermore, these cognitive endeavours persist in reminding humans of what is unknowable to them upon dissection of the metaphor (Fudge 2004).

As per the constructed meaning humans create to make sense of their lived relations with other animals, the animal becomes what we want it to be rather than what it actually is. In addition to metaphors, other discourse constructs are employed to further distort authentic understandings of other animals with regards to what is unknown to us. Absent referents, for example, is the often-unconscious employment of wholly naturalized language that removes an animal from their appropriate context and in doing so, obstructs authentic recognition.

While this can often incite negative perceptions that are cultivated from dominant anthropocentric ideologies, Sabloff (2001) confronts the problem of the metaphor with the assertion that a metaphor encouraging a biocentric relationship is absent from current modes of human thought. In this proposed way of thought, the inherent value of other animals would be recognized in its own right, independent from a human relation. However, this may prove to be a fundamentally tricky concept for humans to grasp (Fudge 2004; Sabloff 2001).

Ideological Conflict

Here, it seems appropriate to consider the ways humans think about other animals to understand how we make sense of our encounters with them. To start, beliefs about and attitudes toward other animals are not only ripe with contradictions, but these contradictions continuously come into play during human/non-human animal encounters. With that said, they often go unrealized in that we fail to consciously appreciate the likeness between the cat we live with and the raccoon inhabiting the backyard. Therefore, it seems illogical that we live among other animals, recognize them, and at times name some of them, while simultaneously maligning and treating some other animals as though they are inanimate objects. In this way, we willfully evade the irony of these relationships, and at times, refuse to acknowledge these contradictions as laden in our beliefs, perceptions, attitudes and behaviours (Fudge 2004).

In large part, the enduring social and political structures give way to hegemonic relations of power that actively shape human/non-human animal encounters through mechanisms that bias our perceptions, attitudes and practices toward them (Fudge 2004). To elucidate understanding of our encounters with other-than-human animals, Fudge (2004) argues that other-than-human animal others present the limit case for human margins of understanding. Beyond acknowledgement of non-human animals as both similar and dissimilar to humans, they are also

friend and foe, amiable and inimical, and individualized and objectified within contemporary society (Fudge 2004). In effect, then, interpreting the concept of animality perennially and polemically presents a challenge to humans (Fudge 2004; Hadidian et al. 2010). Undeniably, animals are like us in a multitude of ways while they are simultaneously not like us in many other ways. Recognizing that complete understanding of other animals is impossibly lost to us, Fudge (2004) argues that it is in the paradox of the same yet different that cultivates our fascination with them.

Anthropocentrism and hegemony. It seems strange that individuals and societies as wholes have consistently ignored the prevalent contradictions that are embedded within our relationships with other animals, though what is clear is that humans unfailingly position themselves as preserver, conqueror, or observer of what is categorically "natural." Other animals, then, simply become the means by which humans exercise their assumed power. Therefore, human/non-human animal relations are based on the dynamics of power and the pursuit of superiority (Fudge 2004).

Despite deriving an understanding of other animals through recognition of likeness, humans enact targeted oppressive institutions in response to their difference, as such inadvertently illustrating that persistence of dominion is mutually exclusive to the recognition of sameness. Similarly, if other animals are perceived to share emotional and physical experiences similar to humans then dominance through practices of experimentation, elimination, and the like become impossible to reason (Fudge 2004). Therefore, anthropocentrism is not natural. Rather, it is irrational and fundamentally flawed, and so, as proposed by Sabloff (2001), a biocentric ideology seems logical (Fudge 2004).

Social constructs of spatial legitimacy. Inherent of anthropogenic constructs of culture and society, non-human animals are interdependently cast as objects and therefore not categorically "human" (Fudge 2004). Through this practice, society challenges the legitimacy of other-than-human animals in urban spaces (Luther 2013). Interestingly, Luther (2013) posits value assigned to others as a dynamic construction, wherein the spatial legitimacy of a being is decided upon transections of space and ideologies of belonging, ultimately raising questions about what it means for a body when it does not seem to fit appropriately anywhere. Therefore, Luther rejects the dualist mentality of "wild" and "domestic" animals that is typical of traditional animal rights theory in favour of creating a category that acknowledges the animals who do not belong to either group, referring to them as liminal animals (2013). As mentioned, these animals are intermediary, and as Luther asserts, also legitimate beings in the spaces that they share with humans (2013).

Discursive rendering through social constructs. Fudge (2004) argues that perceptions and attitudes concerning non-human others echo the widely-held beliefs and practices that are deeply embedded within the social and political structure. Moreover, the ways in which society maligns and oppresses other-than-human animals employs the same patriarchal systems and institutions that perpetuate the oppression of marginalized groups of people (Fudge, 2004; Waldau 2013). Therefore, human relationships with other animals present itself as the problem of the human rather than the problem of the "animal" (Fudge 2004).

Social institutional constructs. As discussed, polemical debates about nature-culture relations underscore that human encounters with other animals are inextricably shaped by broad, over-arching institutional structures (Fudge 2004; Wolch, West & Gaines 1995). Interrelation among social constructs of capitalism, patriarchy, gender, race, ethnicity and the like, impress

uneven distribution of power across categories of being and create interlocking oppressions across various groups of marginalized others (Corman 2011; Wolch, West & Gaines 1995).

The relationship between humans and other animals is inherently complex. Deconstructing the notion of animality and our lived relations with other animals presents a challenge to humans: animals are like us in that they form bonds and communicate with one another, yet they are simultaneously not like us in myriad other ways. Because of this, a complete understanding of them is impossible (Fudge 2004). However, understanding animality is increasingly recognized as an essential dynamic in the construction of humanity, as well as integral to dismantling the hegemonic social and political processes that systemically exclude sentient beings from accessing the same ethic of institutionalized care across species (Corman 2011). Contemporary debates about nature-culture relations suggest that human interactions with wildlife are strongly shaped by broad social structures that give way to capitalism, patriarchy, social constructions of gender, race, and so on (Wolch, West & Gaines 1995).

Interlocking oppression. Waldau (2013) contends that all kinds of violence are often intimately "interlocked." In this way, harm caused to one group of sentient beings can prime other forms of oppression against the same group or others. One kind of oppression may be so deeply tangled with other forms that its occurrence not only becomes exponentially more infectious but also even further resistant to critique or change. So, Waldau (2013) outlines two critical insights: various forms of oppression are often interrelated, and actions to oppress others are reflexive and, therefore, can also be emaciated (Waldau 2013).

Affinity via discursive conveyance. Parallels between symbolic renderings of gender, race, class, species, can be drawn. Raccoons are viewed as constituents of the human constructed category of "wild animals," "pests" or "vermin." Upon appraisal, inflections of racist, sexist and

classist discourses are fixed within these categories. This pattern of discourse acts to mutually reinforce negative environmental narratives about both raccoons and humans wherever people are routinely identified, stigmatized and essentially marginalized via dominant social and political processes (Corman 2011).

Furthering the plight of urban raccoons is that they are less readily seen as individuals relative to their human counterparts. Therefore, the category of "raccoon" fails to acknowledge the diversity of experience and individuality in the way that subcategories of "race," "sex" and "class" operate for the social category. This diminution toward biological and genetic reductionism of nonhuman life reveals a problem of logic for those who dispute similar claims involving human individuals. In this way, humans often express dissent for dehumanization while simultaneously accepting the "de-animalization" of other-than-human animals, consequently depriving other sentient lives of the complexity that we readily afford to human lives (Corman 2011).

Etymology and intersections of "raccoon." *P. lotor* also goes by such common names as "North American raccoon," "northern raccoon," the "raccoon," and colloquially as "coon." The name originates from the Algonquian word, "aroughcoune," which means "one who rubs, scrubs and scratches with its hands" and aligns with behaviours exhibited by raccoons while foraging (Zeveloff 2002).

Vernacular etymology. Words reflect social standards, social relations, and social hierarchies. Sociolinguists have verified that dominant social groups influence public discourse by encoding social hierarchies of race, gender, and class into the language. Language is both a product of social relations and a tool for organizing them. Language goes beyond a merely

communicative device. Language not only expresses ideas and concepts but it may actually shape them. Often the process is entirely unconscious (Artz & Ortega Murphy 2000).

Because of the raccoon's appearance –a bandit-like mask– in combination with a reputation for eating crops, their high functioning capabilities and encounters with humans, they may be perceived as mischief-makers and thieves (Corman 2011). From here, subconscious ideas about raccoons may intersect with latent stereotypes triggered by race, sex, class, or species, among other social constructs, which seeks to mutually reinforce degradation of both parties further (Corman, 2011; Waldeau 2013).

Stereotypes. Traditionally a stereotype has been defined as overgeneralized attributes or false beliefs associated with members of a social group with the implication that it applies to all group members. A large body of research has focused on the negative stereotypes of people of colour and women, which are linked to prejudice and discrimination in society (Hinton 2017).

Stereotypes and generalizations about African Americans and their culture have evolved within American society dating back to the colonial years of settlement, particularly after slavery became a racial institution that was heritable. "Coon," a diminutive of raccoon and originally a short form for raccoon, was not always a derogatory racist term. Before 1848, the word coon referred to a white country person who was especially sharp and sly. Then to identify with rural common people, the Whig party, a political group in support of the American revolution, adopted the symbol of the coonskin cap and used raccoons as its emblem. Under the influence of black-faced minstrel shows that developed in the early nineteenth century, however, the meaning of coon gradually evolved from signifying sly rural whites to become a racial slur used pejoratively to refer to shiftless, deceitful rural blacks. The minstrel character "Zip Coon" and the "coon song" craze of the 1830s helped popularize the term as a racial slur (Artz & Ortega

Murphy 2000). Additionally, the racist and sexist term "coontang" has been used to refer to a black woman, which has been shortened to "tang" to refer to female genitals, the vagina or intercourse with a woman, thus denigrating toward all women (Corman 2011).

Implicit Stereotypes. Experimental studies have demonstrated that participants exhibit a response bias in support of a stereotypical association even for those who consciously and morally reject the use of stereotypes. This finding demonstrates a "cognitive bias," implying an implicit prejudice. However, Hinton (2017) challenges this view and argues that implicit stereotypical associations (like any other implicit associations) are the product of "the predictive brain." This theory operates under the assumption that associations are established through experience and prevalence in the social world of the perceiver because stereotypical associations would not be absorbed if they did not represent the state of the world if the predictive brain were to sample randomly or comprehensively. Instead, this theory underscores that people are born into a culture and bound by social networks. Therefore, the implicit stereotypical associations formed by an individual must originate from the associations prevalent within their culture rather than reflect a cognitive bias. By this logic, Hinton (2017) argues that research should consider more closely how associations are communicated within social networks instead of focusing exclusively on an implied cognitive bias to understand implicit stereotypes (Hinton 2017).

Research Design and Methodology

This section details the rationale behind the research method of this study.

Philosophy

The philosophical keystone of this study is phenomenology, which seeks to understand how the world appears to others through exploration of others' subjective experiences and

interpretations. Here on, human-raccoon encounters are studied within this context and with a particular emphasis upon the role of language and discourse.

Epistemological Orientation

An interpretivist orientation is adopted to infer the subjective meanings portrayed via discourse in response to human-raccoon encounters. Through their own common-sense constructs, individuals interpret the reality of their daily lives, which in turn motivates their behaviour. To acquire insight into these thoughts and actions, the social world from the perspective of the actors must be considered. In other words, this study calls for an empathetic understanding and interpretation of human behaviour in which an interpretive approach is used to elucidate a causal explanation of the course and effects of social action. Therefore, the goal of any theory generated here is to be founded on the perspectives from the individuals studied (Bryman, Bell & Teevan 2012).

Ontological Orientation

Constructionism assumes there is no objective social reality against which our conceptions and views of the world may be tested. This position guides this research in its exploration of how individuals create ideas or representations of the social world and their relationships within it and the ways in which those beliefs are fashioned to justify or rationalize various forms of domination (Bryman, Bell & Teevan 2012).

Research Orientation

Using a qualitative approach, the transcript notes will be examined for emergent themes. Themes are characterized by frequency of certain incidents, words, phrases, and so on. This process is expected to also yield prominence of some themes over others through a kind of

implicit quantification prompting both the identification of themes and elevation of some themes over others (Bryman, Bell & Teevan 2012).

It is typical of qualitative research to examine behaviour with close attention to the context in which it occurs. Characteristic of qualitative research, this study seeks to analyze meanings in the form of attitudes, evaluating the data beyond the behaviour (i.e. what people do) but also how they think and interpret the world, underscoring the importance of meanings and interpretations in grasping social phenomena in terms of norms, values, and culture of the sample group (Bryman, Bell & Teevan 2012).

Study Type

This research may be described as a descriptive study. Characteristic of a descriptive study, each case is measured once; the objective is only to ascertain relations between variables; and the study includes a sample of 15,502 cases to warrant that a valid estimate of a generalized relationship between variables has been acquired (Bryman, Bell & Teevan 2012).

Research Design

Due to the unstructured nature of the data and the limited amount of research on this topic, this study uses divergent reasoning, meaning the generation of ideas and interpretations from the research occurs in a spontaneous, free-flowing fashion, and follows the principles of grounded theory, a flexible research design using an iterative approach whereby theory is generated from the data. Here, data are examined for information to construct a theory rather than to test a theory.

Approach. Grounded theory, and subsequently this research, is underpinned by an inductive approach. Relying upon exploratory work to gather and identify themes, the generation of theories and interpretations via the relationship between theory and research is the principal

aim. From the perspective that social reality is a fluid and emergent property of individuals' conceptions, the data set is examined for potential relationships between variables to explore the ambivalence of social attitudes toward raccoons in urban areas.

Study Area

For the purpose of this research, the area of study is the Greater Toronto Area (GTA). This study area was determined based upon the location of Toronto Wildlife Centre (TWC). However, being the only wildlife centre in Ontario with a rescue program, TWC could be called upon by any member of the public in the province to assist with this one specific type of encounter, however the overwhelming majority of calls of all types come from encounters between humans and other animals in the GTA (Toronto Wildlife Centre n.d.).

The General Toronto Area (GTA)

In addition to, the GTA is comprised of the four regional municipalities that border the City of Toronto. These regions are Durham, Halton, Peel, and York (OECD 2010 [see figure 1]). As urban sprawl continues, the GTA has been officially recognized as a significant constituent of a much larger urban agglomeration designated as the Greater Golden Horseshoe (GGH). The GGH extends the geographical boundaries west to Waterloo Region, north to Barrie and Simcoe County, and northeast to the county and city of Peterborough (Ontario Ministry of Public Infrastructure Renewal 2006 [see figure 2]).

Census Metropolitan Area (CMA)

The land area, population, and population density of Toronto's Census Metropolitan Area (CMA) according to the 2016 Statistics Canada census is approximately 5,906 km^2, 5,928,040, and 1004 people per square kilometre, respectively (Statistics Canada 2017a). However, it

should be noted that not all municipalities considered part of the GTA are included in CMA. Subsequently, Toronto's CMA is smaller than that of the GTA's (City of Toronto 2017).

Some municipalities are included in Toronto's CMA but are not integrated into the GTA (see Figure 1). These different border configurations result in discrepancies among land area statistics and population demographics. For example, Figure 2 demonstrates that Oshawa and Hamilton are the centre of its own CMA despite belonging to the GTA, while multiple other municipalities are included in the CMA but are not constituents of the GTA (City of Toronto 1997).

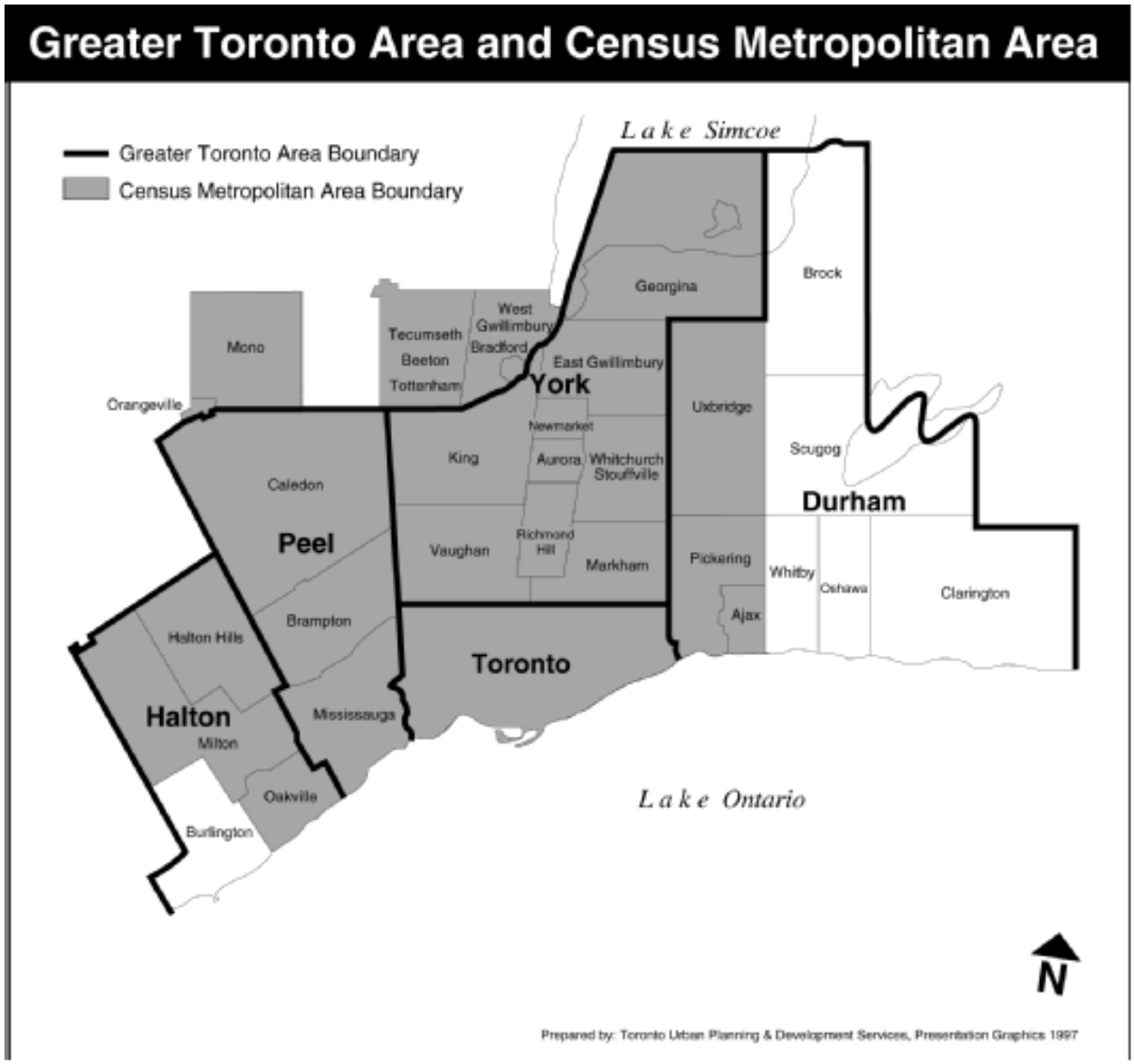

Figure 1. Regional context map outlining the boundaries for both the GTA and Toronto's CMA. Reprinted from Census Tract Reference Maps, by City of Toronto, 2016, Retrieved from https://www.toronto.ca/city-government/data-research-maps/maps/census-tract-reference

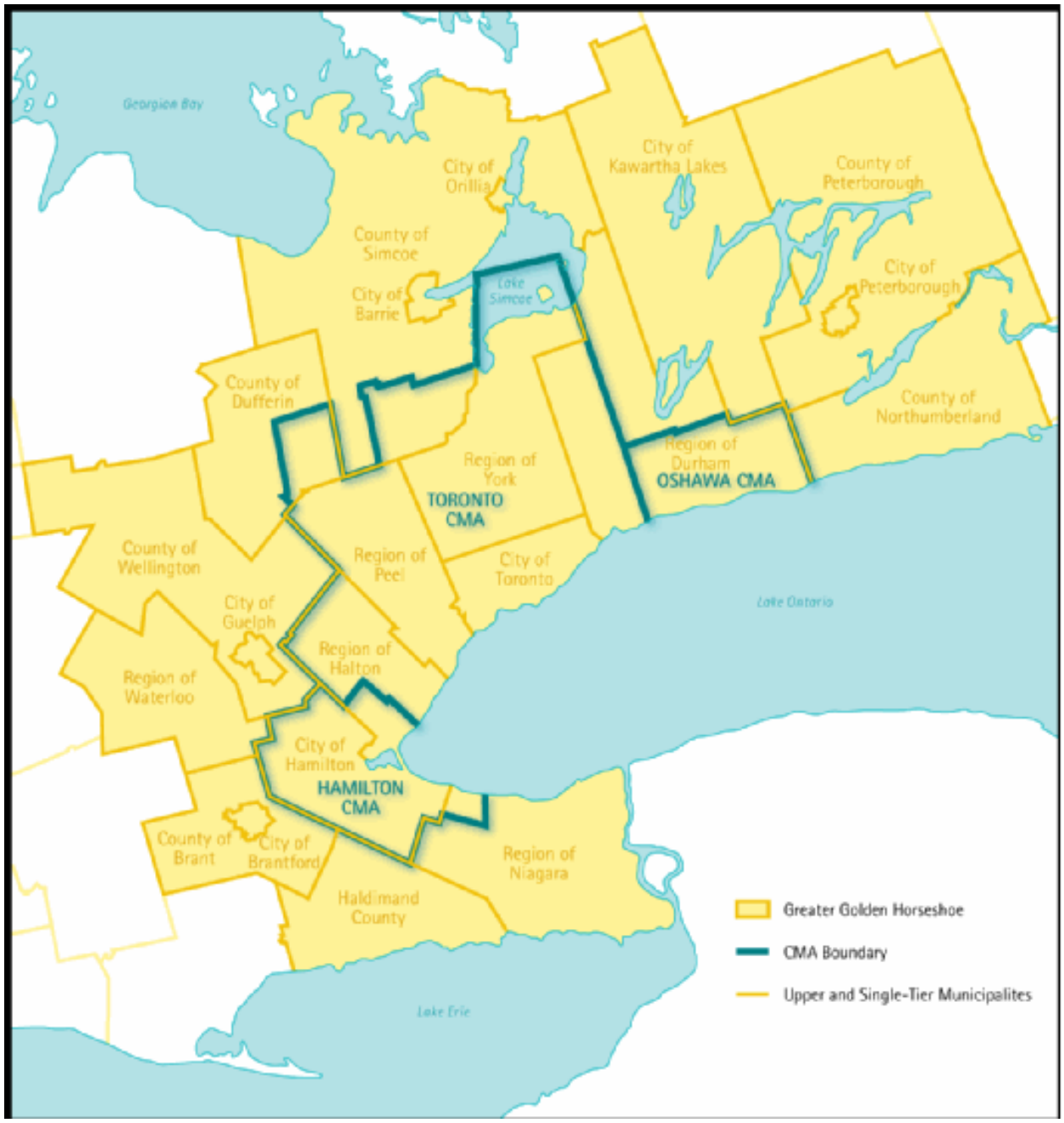

Figure 2. Regional context map outlining the municipalities comprising the GGH area and the CMA boundaries for Hamilton, Toronto, and Oshawa. Reprinted from Census Tract Reference Maps, by City of Toronto, 2016, Retrieved from https://www.toronto.ca/wp-content/u

History

Toronto was established as an important trading post during the 1700s when a series of crucial trails and water routes declared the "Toronto Passage," which led from northern and

western Canada to the Gulf of Mexico, were discovered by the Europeans, subsequently inviting human settlement (City of Toronto n.d.).

Geography

Bordered by Lake Ontario to the south, Kawartha Lakes to the east, the Niagara escarpment to the west, and Lake Simcoe to the north, the Greater Toronto Area encompasses an area of 7,124 km^2 (Wilkes 2018). Altogether the region constitutes the Greater Toronto Bioregion, a natural ecosystem that coexists with urban sprawl (Royal Commission on the Future of the Toronto Waterfront (Canada), Shoreline Regeneration Work Group 1991).

One of the most distinctive geographical features of the GTA is its remaining farmland and forests. Moreover, a number of conservation areas consisting of forest, parkland and wetlands in the region are laced throughout urban spaces ("Rouge Park - About Us," 2012).

In 2005, the Government of Ontario passed legislation to protect environmentally sensitive land in the GTA from urban development. This area, termed the Greenbelt, includes protected sections of the Oak Ridges Moraine, Rouge Park and the Niagara Escarpment. Still, low-density developments continue to be built on or near ecologically sensitive and protected areas despite legislation. In response, the provincial government passed the "Places to Grow" act in 2005, which stresses higher-density growth in existing urban cores spanning the following twenty-five years (Ontario Ministry of Public Infrastructure Renewal 2006).

Climate

Using the Köppen-Geiger climate classification, the Greater Toronto Area is a "humid continental climate," meaning a climate region typically typified by large seasonal temperature differences, with warm to hot (and often humid) summers and cold winters (Peel, Finlayson & Mcmahon 2007).

Agriculture

Despite vast land use changes that have reduced the overall number of farms in the General Toronto Area, the City of Toronto has retained a small percentage of agriculture while larger amounts of agricultural still space occupy its surrounding municipalities. Types of farms in the GTA are more often greenhouse, vegetable, fruit, among others, thus indicating a shift from traditional livestock and cash crop farms that require an extensive land base (Greater Toronto Area Agricultural Action Committee 2010).

Infrastructure and transportation

There are numerous public and private transportation organizations operating within the Greater Toronto Area. The GTA also contains a number of King's Highways in addition to municipal highways. Of these highways, Highway 407 remains the longest in Ontario and among the busiest globally, with a segment that holds the distinction of being North America's busiest highway and passes through the GTA ("Government of Ontario, Canada - News," 2007).

Toronto Pearson International Airport in Mississauga of the GTA is Canada's principal and busiest airport. In 2016 and 2017, it processed over forty-four million passengers and over forty-seven million passengers, respectively. This airport, in addition to a number of other airports scattered throughout the GTA, increase flow of human presence in the area ("About Toronto Pearson," n.d.).

Study Demographics

At the crux of the GTA and with a population of 2,731,571 people, Toronto is a relatively population-dense urban metropolis (Statistics Canada 2017a). As the most populated city in Canada as well as one of the most multi-cultural and multi-racial cities in the world, Toronto and its surrounding regions lends itself as a first-rate model for studying the common raccoon (*P.*

lotor) given its populous and momentous urban sprawl ("BBC Names Toronto the Most Multicultural City in the World" 2016).

Population dynamics

A combined population of Halton, Peel, Toronto, York, and Durham, the regions comprising the GTA, is 6,417,516 (Statistics Canada 2017b). Estimated to be the fastest growing region of Ontario, the Greater Toronto Area is expected to experience a population increase of by 2.8 million, or 40.8 percent, to reach almost 9.7 million by the year of 2041. Moreover, the GTA currently contains 48.3 percent of the provincial population and is projected increase to 52.3 percent by 2041. A shift towards an older age structure is anticipated independent of region. However, as of 2017 the highest allocation of people aged 15-64 was in Toronto and it is expected to remain the highest come 2041 as a result of robust international migration and positive natural rise (Ontario Ministry of Finance 2018).

Age and sex structure

The average age of the overall metropolitan population is 39.7, with an average age of 38.7 and 40.6 for males and females, respectively. Comparatively, the remainder of the country is relatively higher, with an overall average age of 41.0, and 40.1 and 41.9 for males and females, respectively (Statistics Canada, 2017d).

The median age of the overall metropolitan population is 39.4, with a median of 38.2 and 40.4 for males and females, respectively. Again, this is relatively lower than the remainder of Canada with a median overall age of 41.2 and 40.2 and 42.2 for males and females, respectively (Statistics Canada 2017d).

Of the total population (N=5,928,040), approximately 48.5 percent, or 2,876,755 people, are males and 51.5 percent, or 3,051,290 people, are females (Statistics Canada 2017d).

Politics

Until recently, the City of Toronto has been predominantly supportive of the Liberal Party for nearly the last fifteen years (Powers 2018). In the most recent election, the Progressive Conservative (PC) Party won the majority of the GTA, although it is worth mentioning that the New Democratic Party (NDP) also has a strong base (Rieti 2018). Historically, Liberal support is typically strongest in the City of Toronto, while the surrounding suburban regions of the GTA are more supportive of the PC Party (Powers 2018).

Education

The 2016 census revealed that 89.2 percent of Torontonians between the ages of 25 to 64 received a high school diploma or equivalency certificate, which is higher than the national average. Moreover, 40.9 percent of Torontonians possess a bachelor's degree or higher, while 20.1 percent obtained a college or other non-university certificate or diploma as their uppermost level of education. Lastly, 4.5 percent secured an apprenticeship or trades certificate or diploma as their utmost level of education (Statistics Canada 2017a).

The 2016 census also highlighted sex differences in educational fields among Torontonians. 18.6 percent of women aged 25-64 holding a bachelor's degree or higher studied science, technology, engineering or mathematics (STEM) in contrast with 38.2 percent of men. Rather, a majority of 81.4 percent of women studied outside STEM in fields such as business, humanities, health, arts, social sciences, education, and so on, compared to 61.8 percent of men (Statistics Canada 2017a).

Beyond the GTA

Urban sprawl is spreading into once rural landscapes due to increasing population pressures. The area of Greater Golden Horseshoe, a secondary region of Southern Ontario, is the

most densely populated and industrialized in Canada. The total population of the GGH is 9,245,438, accounting for over a quarter of Canada's total population and two-thirds of Ontario's population (Statistics Canada 2017b; Statistics Canada 2017c).

CHAPTER 3: RESEARCH METHODS

This chapter will discuss the methods employed to conduct this research study. Here, the sample, materials required for analyses, and the procedure for collecting and analyzing the data are described.

Methods

Sample

The sample consists of 15,502 calls reported by Toronto dwellers to the Toronto Wildlife Centre (TWC) over a ten-year period spanning from July 3, 2003 to July 3, 2013.

Materials

The data set was maintained electronically by volunteers of TWC and made available to this study in the form of a Microsoft Excel document. NVivo, a qualitative data analysis, was used to code the data, document the data analysis process, and present a visual representation of the results.

Procedure

The following outlines the processes of data collection and analysis.

Data collection. Toronto Wildlife Centre (TWC), a not-for-profit organization that provides support to sick and injured non-human animals, provided the raw data for this study. Typically, TWC receives approximately 30,000 calls each year from people regarding over 300 species. Consequently, it is the busiest wildlife hotline in Canada (Toronto Wildlife Centre, n.d.)

The data set consists of 15,502 individual cases. Each case is the record of a call reported to TWC subsequent to a human-raccoon encounter in the Greater Toronto Area (GTA) by members of the public to TWC staff and volunteers. The record includes details from telephone conversations between an operator and a caller regarding a “wild” animal issue or inquiry. The

purpose of the hotline is to provide a center where members of the public can verbally report their encounters with other species such as raccoons, squirrels and skunks, and seek advice from qualified operators who maintain an electronic record of basic information from their conversation. For the purposes of this study, encounters are defined as any sighting, injury, conflict, or nuisance event between a human and a raccoon reported to TWC.

Data analysis. This paper uses a content analysis to develop an understanding of how society individually and collectively constructs perceptions of human-raccoon encounters to predict corresponding attitudes. Content analysis is best applied to the examination of various documents and texts. It will be applied both quantitatively, when focused on analyzing the data across predetermined categories, and qualitatively, when seeking to uncover deeper meanings in the text field. The aim of this process is to code for words that represent a summative, salient, or evocative attribute of the population for a portion of language-based or visual data.

Data stratification: Count words and phrases. To gain familiarity with the data, the frequency with which certain words and phrases were used was determined using a query search. Simple counting of particular words can reveal emphasis, style of presentation, and even overplaying of events. A variation on the search for individual keywords is the search for pairings of keywords. The search for pairings of keywords can be a startling point for a more in-depth analysis.

Coding classification: Identify subjects and themes. At this point, labels are assigned to the nodes to engage in a more interpretative approach to code the text in terms of subjects and themes. Transcending frequent words and phrases, the underlying or latent content is considered for the purpose of exploring deeper questions about what qualities people bring into their encounters with raccoons and its greater inferences for human identities. Using Microsoft Excel,

a modified coding schedule for this study was derived from the format used by TWC to act as a form onto which the data were inputted in NVivo. Each of the columns in the coding schedule was a dimension to be coded. To accompany the coding schedule, a coding manual including all possible categories for each dimension to be coded with a list detailing the different categories subsumed under each dimension and the codes that correspond to each category was created.

Value positions. Building upon the subjects and themes, a further level of interpretation occurred where it could be demonstrated that text exudes a certain value position. The procedure of the study remains iterative as information is viewed in relation to theories to establish order and meaning across the data.

CHAPTER 4: RESULTS

This chapter presents the results of the analyses conducted to identify trends across the data.

Data and Analyses

All data were imported to NVivo from Microsoft Excel. Then, the data set was coded at cases for each value in a column, meaning that a case was created for each call. At the same time, attribute values were assigned from the classifying columns. For this study, classifying columns included the year of the call and the reason for the call and attribute values were the corresponding variables.

Reason

Overall, the top three reasons for calls to TWC are for *sick or injured* (33%), *orphaned* (30%), or *nuisance* (17%) raccoons, followed by *trapped* (5%), *sighting* (4%), *welfare follow-up* (3%), *dead* (2%), *denning* (2%), *displaced* (2%), *in distress* (2%), *cruelty* (0%), and *raised* (0% [see figure 3]).

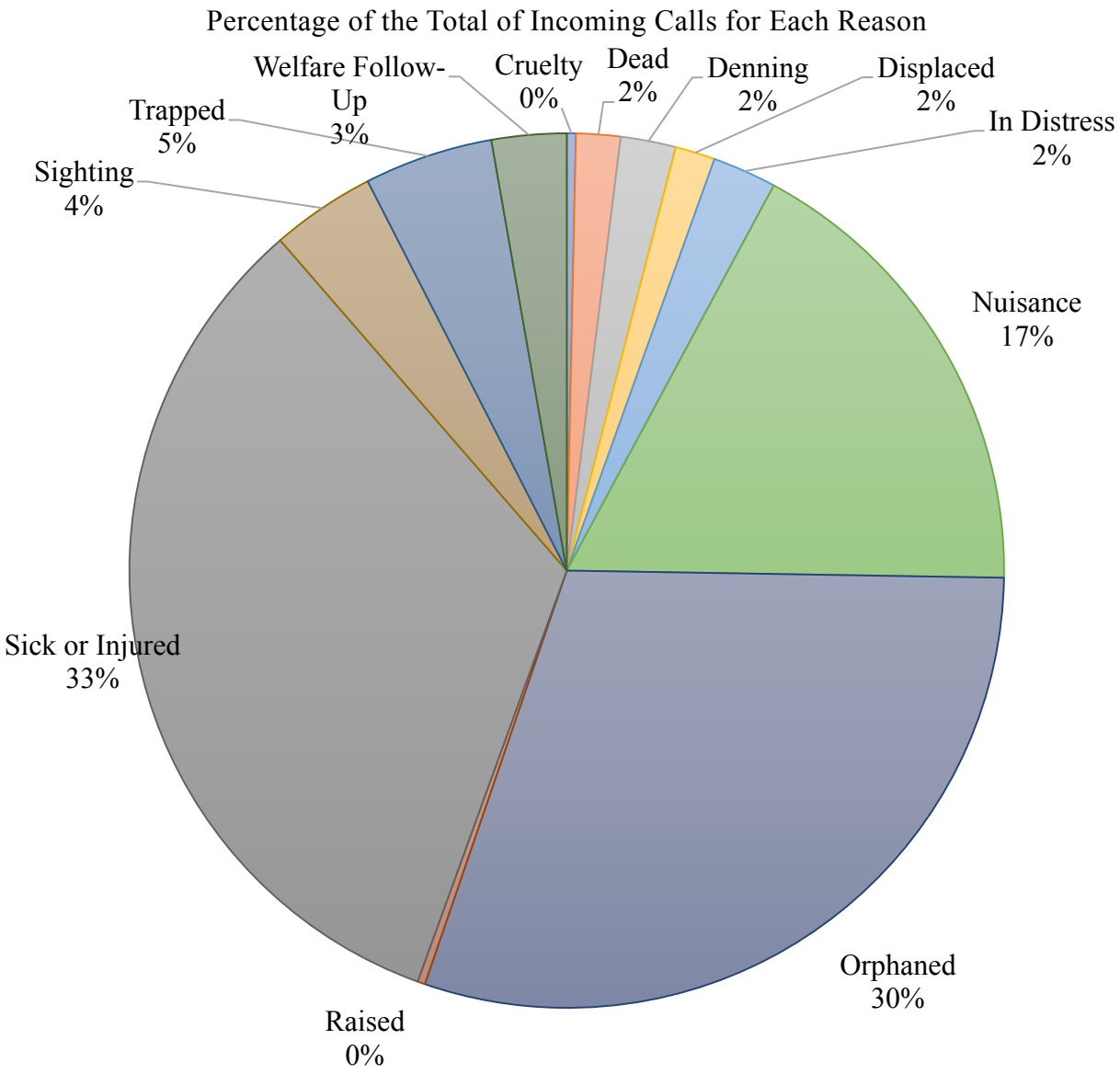

Figure 3. Percentage of the total of incoming calls for each reason. This figure depicts the percentage of the total of incoming calls over from July 3, 2003 to July 3, 2013 for each reason for call.

Themes

To take a closer look and examine temporal trends for the reason for call and to effectively analyze this mass of data, reasons were coded into larger themes. Four themes were identified: *compassion*, *ambiguous or neutral*, *nuisance*, and *fascination*.

Coding Manual. Cruelty, denning, displaced, in distress, orphaned, trapped, and *welfare follow-up* are coded as compassion based on their definitions, which infers an ethic of concern for the well-being of the raccoon(s). *Dead, sick or injured*, and *sighting* are coded as *ambiguous or neutral* because these reasons do not indicate obvious sentiment. For example, a call categorized as *sick or injured* may be the result of either fear of or compassion for the raccoon. *Nuisance* is the only reason coded as *nuisance* because it is the only category that evokes a negative sentiment. Last, the reason *raised* is coded as *fascination* because raccoons kept as pets are rooted in attraction and allure, somewhat distinct though not exclusive from an ethic of compassion.

Most reasons for calling were coded as *compassion*, followed by *ambiguous or neutral*, then *nuisance* and *fascination*. The percentage of the total of incoming calls for each theme is: *compassion* (44%), *ambiguous or neutral* (39%), *nuisance* (17%), and *fascination* (0% [see figure 4]).

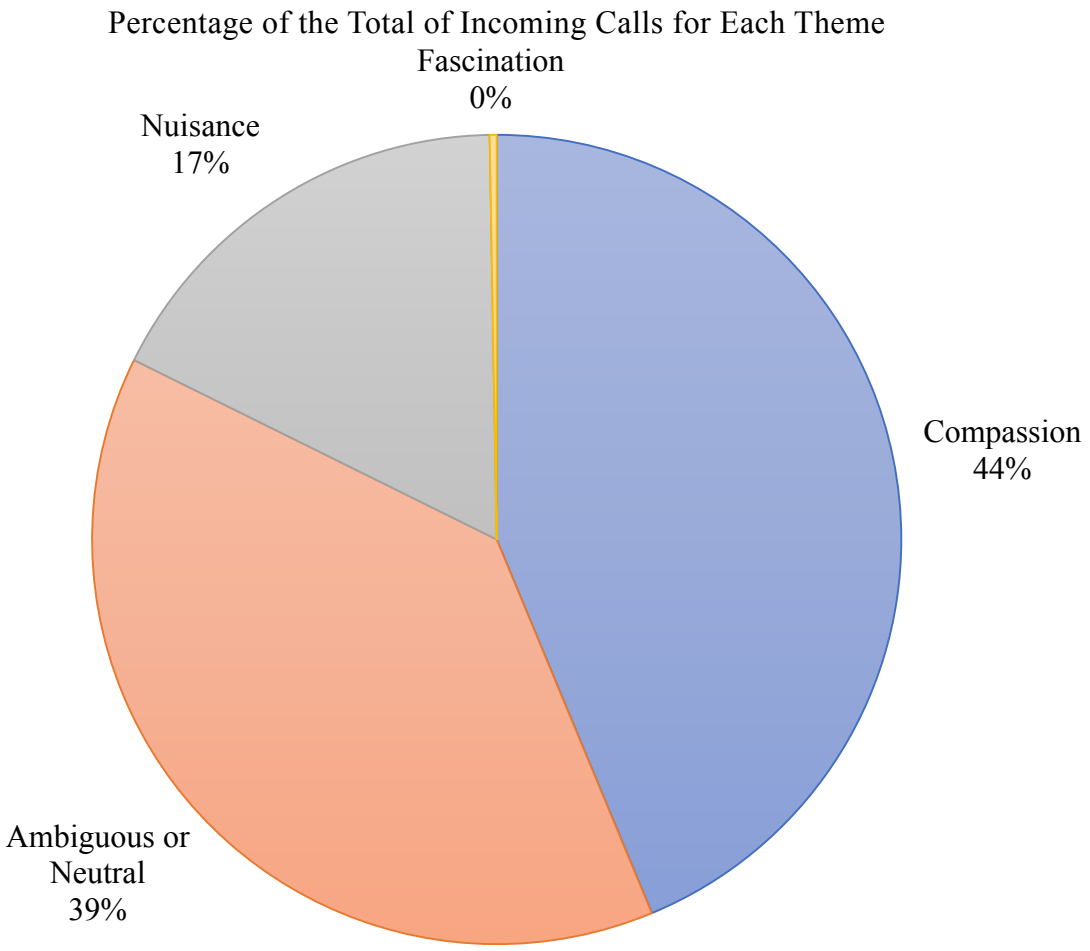

Figure 4. Percentage of the total of incoming calls for each theme. This figure displays the percentage of the total of incoming calls over from July 3, 2003 to July 3, 2013 representing all calls for each reason within its corresponding theme.

Discourse Trends

To explore patters in the language used to describe encounters with raccoons to TWC, the data were analyzed using various lexical query tools in NVivo. Using NVivo to parse speech of referential communication, i.e. the subject (caller) formulates a message about an object (raccoon) in the environment.

Lexical queries. After using the attribute values from the reason for call classifying column to manually code the data into four nodes or themes: *compassion, ambiguous or neutral,*

nuisance, and *fascination,* lexical queries such as word frequency and text search were employed to explore expository language (i.e. language that is intended by the caller to convey information about the subject matter) and identify interactional content (i.e. the content of a sentence that conveys a speaker's attitude toward the listener) from the verbal communication between the caller and the TWC operator.

Word frequency queries. To analyze speech to discover its implications or uncover a deeper meaning about the referent (i.e. the raccoon(s) to which the linguistic expressions refer), word frequency queries were conducted with a minimum length of 3 characters not including stemmed words (e.g. *talking* is the stemmed word of *talk*) for each theme. This study is interested in lexical, or content, words (i.e. words that play a primary role in the meaning of a sentence) to interpret the emotional reactions of callers, as opposed to function words, which have very little substantive meaning and primarily denote grammatical relationships between content words, such as prepositions, pronouns, and conjunctions.

From here, word frequency tables were generated from word frequency queries. These queries focused solely on descriptive units of language indicative of perceptions or attitudes. Adjectives and adverbs are descriptive words that describe the quality of the objects of reality. Therefore, only adjectives and adverbs were included in the lexical analyses because they characterize perceptions about a noun (i.e. adjectives) or verb (i.e. adverb); adjectives elucidate how people interpret or perceive their encounters with the subject (i.e. raccoon), while adverbs illuminate reactions (i.e. attitudes or behaviours) to encounters with the subject. Words that do not classify as a qualitative or descriptive adjective or adverb are excluded using the *word stop list* function. Words may belong to more than one word class. An example of this instance is the word *young*, which may be classified as an adjective or a noun. In events where words may be

classified into more than one word class beyond adjective or adverb, the word is included in the analysis.

The top ten most frequently reported words to describe encounters with raccoons belonging to the *compassion* theme were as follows: *baby* (*n* = 4640, 2.37%), *back* (*n* = 3207, 1.64%), *just* (*n* = 3107, 1.59%), *out* (n = 2286, 1.17%), *found* (n = 2221, 1.13%), *injured* (*n* = 2001, 1.02%), *like* (*n* = 1926, 0.98%), *now* (*n* = 1437, 0.73%), *around* (*n* = 1266, 0.65%), and *sick* (*n* = 1035, 0.53% [see table 1]).

Table 1.
Word, Count, and Weighted Percentage of Word Use for Compassion-Themed Calls

Word	Count	Weighted Percentage
baby	4640	2.37%
back	3207	1.64%
just	3107	1.59%
out	2286	1.17%
found	2221	1.13%
injured	2001	1.02%
like	1926	0.98%
now	1437	0.73%
around	1266	0.65%
sick	1035	0.53%

The ten most common words reported to describe encounters with raccoons coded as *ambiguous or neutral* are: *baby* (*n* = 4810, 2.23%), *just* (*n* = 3603, 1.67%), *back* (*n* = 3597, 1.67%), *found* (*n* = 2393, 1.11%), *like* (*n* = 2170, 1.01%), *injured* (*n* = 2061, 0.96%), *now* (*n* = 1605, 0.74%), *around* (*n* = 1452, 0.67%), *looks* (*n* = 1296, 0.60%), and *sick* (*n* =1111, 0.52% [see table 2]).

Table 2.
Word, Count, and Weighted Percentage of Word Use for Ambiguous- or Neutral-Themed Calls

Word	Count	Weighted Percentage
baby	4810	2.23%
just	3603	1.67%
back	3597	1.67%
found	2393	1.11%
like	2170	1.01%
injured	2061	0.96%
now	1605	0.74%
around	1452	0.67%
looks	1296	0.60%
sick	1111	0.52%

For *nuisance*-themed calls, the ten words most often reported to describe encounters with raccoons included: *back* (*n* = 638, 1.99%), *out* (*n* = 623, 1.95%), *living* (*n* = 429, 1.34%), *just* (*n* = 410, 1.28%), *like* (*n* = 410, 1.28%), *under* (*n* = 269, 0.84%), *now* (*n* = 233, 0.73%), *night* (*n* = 208, 0.65%), *live* (*n* = 191, 0.60%), and *around* (*n* =161, 0.50% [see table 3]).

Table 3.
Word, Count, and Weighted Percentage of Word Use for Nuisance-Themed Calls

Word	Count	Weighted Percentage
back	638	1.99%
out	623	1.95%
living	429	1.34%
just	410	1.28%
like	410	1.28%
under	269	0.84%
now	233	0.73%
night	208	0.65%
live	191	0.60%
around	161	0.50%

Last, the ten most common words reported to TWC describing encounters with raccoons of *fascination*-themed calls were: *now* (*n* = 25, 3.42%), *baby* (*n* = 19, 2.60%), *back* (*n* =14, 1.91%), *found* (*n* = 10, 1.37%), *old* (*n* = 10, 1.37%), *just* (*n* = 9, 1.23%), *ago* (*n* = 8, 1.09%), *wild* (*n* = 7, 0.96%), *like* (*n* = 5, 0.68%), and *orphaned* (*n* = 5, 0.68% [see table 4]).

Table 4.
Word, Count, and Weighted Percentage of Word Use for Fascination-Themed Calls

Word	Count	Weighted Percentage
now	25	3.42%
baby	19	2.60%
back	14	1.91%
found	10	1.37%
old	10	1.37%
just	9	1.23%
ago	8	1.09%
wild	7	0.96%
like	5	0.68%
orphaned	5	0.68%

Thirty-one of the forty words (77.5%) highlighted across themes appear in at least two themes, though nine that are unique to one theme exist within the data. *Compassion* does not have a word that is solely unique to its theme. *Looks* is unique to a*mbiguous or neutral*, thus it does not reappear in any other theme. *Nuisance* and *fascination* both have four words each that are thematically unique: *live, living, night* and *under*, and *ago*, *old*, *orphaned*, *wild*, respectively.

CHAPTER 5: DISCUSSION

Issues, such as those of the environment, are socially constructed products of a dynamic social process of definition, negotiation, and legitimation. Inexorably, each stage of this social process reflects classic sociological questions of perception and power (Hannigan 2014). Social constructs are shaped by the discursive framework, a complex interplay between cultural histories, narratives and metaphors that underpin individual and collective claims of knowledge as well as further perpetuate the systemic institutionalization and legitimization of the oppression of "others," including animals (Fudge 2004; Hannigan 2014). In a way, metaphors and symbolic language act as discursive wormholes for understanding. However, shifts in social constructs and hegemonic relations and practices of domination may mean more or less rights for liminal animals, and ultimately, this shifting prerogative translates to a life or death outcome for the animal(s) in question (Waldau 2013).

While it is problematic, anthropocentric worldviews have a long-standing history and inform the way in which we interpret the world today. The literature suggests that encounters between humans and raccoons are increasing as both humans and raccoon populations intensifies in urban spaces. Moreover, studies suggest that increasing encounters between humans and raccoons coupled with imbedded anthropogenic notions of society and progress, encounters are more likely to be perceived as negative. Therefore, raccoons have become the subject of polemical debate in North America (Wolch, West & Gaines 1995). In response, Fudge (2004) suggests it may be worth considering how the illogicality of our lived relations with other animals came to be naturalized in the first place (2004). It seems strange that individuals and societies have failed to critically examine the contradictions inherent in our relationships with

other animals. However, what is clear is that humans persistently position themselves as preserver, conqueror, and/or observer of what is categorically natural (Fudge 2004).

Therefore, not only does urbanization seek to colonize space and impress hardship upon local fauna, but also it condemns those who have adapted successfully in the face of rapidly changing habitat circumstances (Corman 2011). And while raccoons pose some valid concerns, negative perceptions and attitudes cannot be explained on that basis alone. Rather, raccoons are confronted with a plethora of contemptuous characterizations as their being is interpreted through broader human cultural frames, which indivisibly intertwined with ideas about risk and entitlement (Corman 2011; Wolch, West & Gaines 1995). From this perspective, a final problem of logic emerges: if animals share emotional and physical experiences similar to that of humans, legitimizing oppression of them through practices of experimentation, elimination and the like become difficult to reason (Fudge 2004).

Animals, then, simply become the means by which humans exercise dominion. From this, it can be understood that relationships are based on power relations and human superiority. In a similar fashion, humans originate understanding of others through their recognition of sameness while simultaneously replicating institutionalized forms of oppression in response to their difference (Fudge 2004). The absurdity of this relationship underscores Fudge's (2004) assertion that "dominion cannot persist comfortably with the recognition of sameness" (p.13).

Subsequently, the contemporary crisis for "wild" animals becomes the dire demand to acclimatize to life within an urban context or risk disappearing entirely from the matrix. However, new uncertainties are looming for the other-than-human animals that successfully acclimatize to urban spaces. As other animals become liminal to humans, labels may be assigned to them. Depending on perspective, *adorable, cute,* and *amiable*, or *nuisance*, *pest*, and *problem*

are few of many labels that may be assigned to visible liminal animals (Fudge 2004; Warburton & Norton 2009; Wolch, West & Gaines 1995).

In this light, anthropocentrism is not natural; instead it is irrational, integrally flawed and perhaps above all, pervasive (Fudge 2004). Through recognition that social and political institutions produce and reproduce forms of power and dominion over others, human-raccoon studies should explore connections between the marginalization of certain humans and interwoven forms of violence and oppression that impact both humans and non-human animals alike (Waldau 2013). As Waldau concludes, "the good news, then, is that social construction carries as much power to develop an inclusive community as it does to dominate, kill, and extinguish" (p. 408, 2013).

An Interpretation of the Findings

This study analyzed previous literature and data collected from Toronto Wildlife Centre, a wildlife rescue and rehabilitation facility located in the highly developed landscape of Toronto, to deliver insight into human-raccoon relationships in shared urban spaces. The most common reasons for an incoming call to TWC were to report a raccoon that was sick or injured, orphaned, or a nuisance, respectively.

Themes

Coding the data into four themes revealed that most incoming calls to TWC were of a compassionate nature (e.g. to report cruelty, displacement, distress, or an orphaned raccoon, to inquire about the humane removal of raccoons denning in a private structure, and follow-up calls regarding the welfare of a raccoon admitted to the TWC hospital). These results would imply that the population of people calling TWC is tolerant of raccoons in shared urban spaces.

Reasons that did not convey any obvious sentiment, (e.g. to report a dead or sick or injured raccoon, or a sighting of a raccoon that does not fit the criteria of other reasons) were coded as calls of an ambiguous or neutral nature and were the second most common theme of call. This may represent a neutral sentiment among some callers. For example, TWC offers advice and answers to general inquiries.

Nuisance calls were the third most reason reported to TWC. This indicates that there is intolerance among a subpopulation of callers and therefore warrants further examination to determine the contextual factors contributing to the negative sentiment.

Last, calls stemming from a sentiment of fascination represent the least often reported reason for incoming calls. Fascination, distinct but not exclusive from compassion (a positive sentiment), can be more akin to cruelty, although it is unique from cruelty because it stems from adoration and other similar sentiments. This theme arose from individuals who had called TWC after acquiring liminal raccoons and keeping them as pets for some duration of time. It is problematic this event occurs and this result reveals the need for more public information to prevent this type of action. Though, one reason individuals may keep raccoons as pets is if rescue and rehabilitation are at capacity; in this case, the action would be one of compassion. However, there is little information available about the prevalence of this suggestion.

Discourse Trends

Using lexical queries to explore patterns in the language callers used to describe encounters with raccoons, results revealed the most common words. Most words that appeared were visible in more than one category. This may infer that most individuals who choose to call TWC express some ethic of care for raccoons. The most common word for both compassion- and ambiguous- or neutral-themed calls were *baby.* Moreover, *baby* also appears in the ten most

frequently used words in fascination-themed calls. The use of the word *baby* as a descriptor may indicate a subject the caller is protective toward, thus an investment in the well-being of the raccoon.

Adjectives and adverbs that signal a concrete perception most often used by callers include *baby, sick* and *injured. Baby* appears in three of the four thematic categories (*compassion, ambiguous or neutral* and *fascination*) while *sick* and *injured* both appeared twice overall, both in *compassion* and *ambiguous or neutral*. These words are markedly more interesting than other words revealed in the analysis such as *back, like, around* and so on because they imply that a distinct perception about an encounter has been formed.

In many contexts, the word *baby* evokes the idea that the subject is helpless and in need of protection, therefore using this word as a descriptive unit of language to describe the raccoon(s) of an encounter suggests compassion and care for the well-being of the animal in question. In a similar fashion, the words *sick* and *injured* denotes a perception on behalf of the caller that the raccoon is indeed sick or injured. This may imply concern stemming from either care and compassion or fear and risk.

Words that did not appear in more than one category were *looks, live, living, night, under*, *ago*, *old*, *orphaned*, and *wild*. Of these words, *orphaned,* and *wild* depict a concrete perception. *Orphaned* was most commonly used within the theme of *fascination.* Therefore, it may mean that the perception of an orphaned raccoon was justification of keeping them as a pet. Last, the word *wild*, found within the theme of *fascination,* is an interesting perception because urban raccoons are arguably no longer a wild species. Rather, they are dependent on people but are not domesticated by them. Therefore, this reveals a deficiency in the discourse in which we speak

about this class of animal and invites the discourse for new language to more accurately describe our relationships and subsequent encounters with them.

Limitations of the Study

The encounters composing the data of this study are interpreted through the lens of an intermediary (i.e. the TWC operator), therefore the original language may be distorted as its transcribed. The broad and predetermined categories do not necessarily reflect how people really feel about the subject. The category most rich in codable data, the hotline notes (HLNotes), is limited by TWC operators in its detail; the field only displays the first two to three sentences before it cuts off and reveals no further details. For this reason, the availability to provide more qualitative detail about perceptions and attitudes is obstructed.

Moreover, some categories overlap, skewing the results of this study because it is the responsibility of the TWC operator to interpret which category best fits the call (e.g. call no. 2700 regarding a mother and offspring living in a boat was categorized as displaced, but denning would have also been applicable; call no. 461 regarding a raccoon kept as a pet for almost a year was categorized as displaced but raised would have also been appropriate, if not more so). Subsequently, this inevitably influences which data are included in which thematic categories. For example, the raccoon kept as a pet for approximately a year is coded under the theme compassion, as opposed to fascination.

Another limitation of the data set is that it does not contain a consistent record of the location of the encounter, and since TWC is province-wide, results may be skewed by rural outliers. Moreover, it prevents exploration into more locality-based perceptions and attitudes concerning raccoons and other animals. Similarly, the data does not consider demographic details such as age, gender, politics, and education, therefore information such as this could not

be included in the analysis. This is a loss because previous academic studies suggest that factors such as these influence perceptions and attitudes regarding other animals (Wolch, West & Gaines 1995)

Furthermore, the current data is only valid for projections and therefore cannot speak to the historical events informing the individual's interpretation of the encounter – only to how the description of the encounter reflects the beliefs, values and attitudes held by the caller. For the aforementioned reasons, the results of this study are limited as more quantitative descriptions are provided rather than detailed a narrative exploring human perceptions and attitudes concerning raccoons.

Additionally, it is important to note that TWC is not the only outlet for human-raccoon encounters. Alternative to TWC (i.e. a rescue and rehabilitation organization) are wildlife control agencies, which mainly manage pest control and removal services. Hence, the population of people calling TWC may not be representative of the larger urban population because a rescue center is categorically different than a wildlife control agency and each may appeal to different individuals despite that many situations could objectively be applicable to either service. Therefore, the type of organization in which an individual chooses to call might illuminate individual perceptions and attitudes.

Future Research

Future research suggestions include more data to explore the intersection between the reality of raccoon encounters and conventional social constructs. For example, if an individual either knowingly or unknowingly subscribes to the dualist mode of thought that nature is "out there," separate from culture, and that the city is "in here," the epitome of culture, then they may perceive an encounter with a raccoon negatively because it is outside of their realm of beliefs and

expectations. Therefore, managing expectations may increase tolerance and peaceful cohabitation in urban spaces.

Last, a content analysis of this data where verbs were analyzed instead of adjectives and adverbs may yield valuable insight into the individual perceptions and attitudes that inform the behaviour indicated by the verb.

Recommendations

Understanding how populations respond to anthropogenic stimuli will assist with developing appropriate management strategies for carnivores that occur in urban areas.

If human-raccoon encounters in urban areas are so powerfully driven by human population density and by human attitudes about animals, then there are possibilities for improving the nature of human-raccoon relationships through conscious design. An increase in awareness through campaigns aimed at educating the public about the systemic causes for complex environmental problems and the role of humans in the perceived war on raccoons. Similarly, information on the urban ecology of wildlife species may have direct management implications.

Recommendations include encouraging public discourse on the ethical treatment of liminal animals, instilling an ethic of non-interference amongst city dwellers. Additionally, if the ultimate determinant of raccoon numbers is the quality and extent of habitat, then raccoon densities can be changed by varying cover, food, or access to water (Gehrt 2004). For example, current evidence suggests reduction of trash (or access to trash) in urban parks and residential areas will reduce the carrying capacity for raccoon populations, resulting in reductions in density and possibly reproduction rates (Prange et al. 2003). Therefore, advocating for behavioural change in the way of promoting the reduction of human refuse and storing organic waste inside

until it can be picked up contribute to greater resilience in the community through better trash practices. Similarly, adequately maintaining urban structures to prevent raccoons from exploiting these structures (Gehrt 2004).

Placing a ban prohibiting the feeding of raccoons may be an effective strategy. If supplemental feeding is known to augment raccoon fecundity and populations as well as habituate raccoons to people (Fuller, DeStefano & Warren 2010). Thus, discouraging wildlife feeding by residents may affect the behaviour of certain individual animals, reducing human-wildlife conflicts and reduce these animals from creating local habitats.

Implications

Populations of both people and raccoons are increasing, and while the results of this study could not illustrate this, literature suggests that encounters are increasing in tandem (Ditchkoff, Saalfeld & Gibson 2006; Hadidian et al. 2010). The meaning of these results may indicate that people are reporting their encounters to other agencies or they are managing these encounters themselves.

One objective of this study is to gain better understanding of GTA dwellers' perceptions and attitudes toward the urban raccoon population. A reason for call, *sick or injured* in combination with the frequent use of the words *sick* and *injured* by callers, may speak to the perception of risk among the public. Raccoons are historically and culturally perceived as urban disease reservoirs for various diseases, namely canine distemper, feline leukemia and raccoon roundworm (Corman 2011; Wolch, West & Gaines 1995). Therefore, any risk is – to some degree – constructed, and thus raccoons may be unfairly perceived negatively and may be subject to unjust attitudes and behaviours (Hadidian et al. 2010).

Moreover, the implications of these results extend beyond only human-raccoon relationships. While these results may suggest positive perceptions and attitudes of equality and well-being for others, it is also possible that these results reveal negative sentiments. All types of oppressions may interlock to pervade and manifest in relationships with both conspecifics as well as other animals. In accordance with the theory of interlocking oppressions, incoming calls reporting acts of cruelty towards raccoons may signal the potential for violence towards people and other animals. Thus, harm caused to one group of beings can prime other forms of oppression against the same group or others. The ability to identify locations and subsequently individuals committing acts of cruelty may translate to early intervention and prevention of cruelty towards other marginalized groups (Waldau 2013).

Conclusion

How we think about something is rooted in our experiences. However, how we think about these experiences are indivisible from influence by social institutions and cultural discourse. Language inevitably biases the meaning we assign to our surroundings, and subsequently, the words we choose to describe encounters with raccoons. The words we choose to describe these encounters exposes individual and collective social identities.

Interspecies relations are ambiguous, contested, and politicized and are critically dependent upon context, more so in urban spaces. Underscoring the fallacy of the dualist ideology of the nature/culture divide, non-human animal lives are profoundly entwined in a shared social life independent of geographical location.

This research identifies the social constructs underlying individual perceptions and attitudes regarding raccoon encounters and elucidates intersections with other marginalized groups. The cultural production of the discourse that creates and reinforces the social constructs

that obstructs and distorts others from their authentic recognition via means of discourse to reduce them to metaphors was explored through the scope of human-raccoon encounters.

In conclusion, the results of this study imply two actively competing social constructs among individuals in the GTA: an ethic of care and compassion for all animals and in contrast, fear of inhabiting shared spaces with other animals. While it may be possible that people are more compassionate towards raccoons than one might think, these results (i.e. the word frequency of *sick* and *injured*) indicate that it is also possible that the construction of risk is not reflecting the reality of risk (Hannigan 2014). While using words like *sick* and *injured* to describe encounters may stem from care and concern, they may also be the result of implicit stereotypes like raccoons are dirty, dangerous, or diseased. Therefore, the influence of either social construct would vary across individuals based on their unique history and experiences. Last, it is important to understand the role of the social construction of Others to identify areas for intervention to advance the integrity of both human and animal communities.

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Appendix A: NVivo Category Headings and Definitions

CallDate

The date the call was received by TWC.

Reason

The encounter that prompted the phone call.

Cruelty. A call regarding one or more raccoons that have been, or are at risk for being, intentionally harmed.

Dead. A call regarding a deceased raccoon.

Denning. A call regarding a raccoon occupying a particular place with their newborn young.

Displaced. A call about a raccoon that is not necessarily sick or injured but is not in an appropriate place (e.g. a raccoon inside of a garbage truck).

In Distress. A call about a raccoon that is not necessarily sick, injured or orphaned (but may be) but is also in a situation that either is or could become life-threatening (e.g. a baby duck being passed around by a group of school kids, a swan on a lake entangled in fishing line).

Nuisance. A call about a raccoon that is in a normal/healthy situation but is causing some disturbance to the caller (e.g. raccoons under deck, attic, balcony, etc.).

Orphaned. A call about a young raccoon that is likely no longer receiving parental care.

Raised. A call about a raccoon that has been in the care of a person for some time.

Sick or Injured. A call describing a raccoon that is sick or injured.

Sighting. A call about a raccoon sighted that does not appear to be displaced, in distress, sick or injured, or trapped, nor is it a nuisance to the caller.

Trapped. A call about a raccoon that is not necessarily sick or injured (although they may be) but is trapped (as in cannot escape its current location; e.g. raccoon(s) trapped in a chimney).

Welfare Follow-Up. A call for an update about a raccoon that was admitted to the TWC hospital.

HLNotes

Notes recorded by a TWC operator from the original voicemail (i.e. the first contact with TWC about a situation).

Note. TWC Does not consistently record demographic information. This data set has been modified to include only raccoon encounters and the following fields: call number, date and year, reason for call, and hotline notes.

Appendix B: NVivo Stop Words List

a about above advice after again against all am an and animal any appears are aren't aren’t as at attic babies backyard be because been before being both box but by call calling can can't can’t cannot care come coming could couldn't couldn’t deck did didn't didn’t do does doesn't doesn’t dog doing don't don’t down during family few for from garage get give got had hadn't hadn’t has hasn't hasn’t have haven't haven’t having he he'd he'll he's he’d he’ll he’s help her here here's here’s hers herself him himself his hit home house how how's how’s i i'd i'll i'm i've i’d i’ll i’m i’ve if in into is isn't isn’t it it's it’s its itself know let let's let’s looks maybe me month more most mother mustn't mustn’t my myself name need no nor not number of one or other ought our ours ourselves own park pet please pls problem racc raccoon raccoons raccs rid roof said same say says seem shall shan't shan’t she she'd she'll she's she’d she’ll she’s should shouldn't shouldn’t since so some someone such take than thank that that's that’s the their theirs them themselves then there there's there’s these they they'd they'll they're they've they’d they’ll they’re they’ve think this those to too until upon us very want was wasn't wasn’t we we'd we'll we're we've we’d we’ll we’re we’ve weeks were weren't weren’t what what's what’s when when's when’s where where's where’s which while who who's who’s whom whose why why's why’s wildlife will with won't won’t wondering would wouldn't wouldn’t you you'd you'll you're you've you’d you’ll you’re you’ve your yours yourself yourselves

Note. The words below are items that preceded the adjectives and adverbs included in the analysis in frequency of use, and were therefore removed.

Appendix C: Tables and Calculations

Table 1
Word, Count, and Weighted Percentage of Word Use for Compassion-Themed Calls

Word	Count	Weighted Percentage
baby	4640	2.37%
back	3207	1.64%
just	3107	1.59%
out	2286	1.17%
found	2221	1.13%
injured	2001	1.02%
like	1926	0.98%
now	1437	0.73%
around	1266	0.65%
sick	1035	0.53%

Table 2
Word, Count, and Weighted Percentage of Word Use for Ambiguous- or Neutral-Themed Calls

Word	Count	Weighted Percentage
baby	4810	2.23%
just	3603	1.67%
back	3597	1.67%
found	2393	1.11%
like	2170	1.01%
injured	2061	0.96%
now	1605	0.74%
around	1452	0.67%
looks	1296	0.60%
sick	1111	0.52%

Table 3
Word, Count, and Weighted Percentage of Word Use for Nuisance-Themed Calls

Word	Count	Weighted Percentage
back	638	1.99%
out	623	1.95%
living	429	1.34%
just	410	1.28%
like	410	1.28%
under	269	0.84%
now	233	0.73%
night	208	0.65%
live	191	0.60%
around	161	0.50%

Table 4.
Word, Count, and Weighted Percentage of Word Use for Fascination-Themed Calls

Word	Count	Weighted Percentage
now	25	3.42%
baby	19	2.60%
back	14	1.91%
found	10	1.37%
old	10	1.37%
just	9	1.23%
ago	8	1.09%
wild	7	0.96%
like	5	0.68%
orphaned	5	0.68%

Table 5.
Number and Proportion of Total Incoming Calls for Each Reason (see Figure 3)

Reason for Call	Number of Calls	Proportion of Calls
Cruelty	52	0.00
Dead	254	0.02
Denning	316	0.02
Displaced	228	0.01
In Distress	367	0.02
Nuisance	2699	0.17
Orphaned	4651	0.30
Raised	43	0.00
Sick or Injured	5129	0.33
Sighting	597	0.04
Trapped	738	0.05
Welfare Follow-Up	428	0.03
Total	15502	1.00

Table 6.
Number and Proportion of Total Calls for Each Theme (see Figure 4)

Theme	Number of Calls	Proportion of Calls
Compassion	6780	0.44
Ambiguous or Neutral	5980	0.39
Nuisance	2699	0.17
Fasciation	43	0.00
Total	15502	1.00

Note. All tables were created from data exported from NVivo into Microsoft Excel and all calculations were performed in Microsoft Excel.