BACKYARD WILDERNESS: AN INTERDISCIPLINARY INVESTIGATION OF THE URBAN ECOLOGY OF LETHBRIDGE

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For Josephine

ABSTRACT

A century ago, nature was seen as unpredictable, dangerous, and chaotic, and the goal was to tame it, map it, and exploit it for its resources. Increasingly, this campaign was replaced by the need to protect and preserve. Nature is now often seen as a pristine retreat, a virgin wilderness in need of our stewardship. Both views share the perception that we exist outside of nature and act upon it. In this thesis, I address this dichotomy and advance Anna Lowenhaupt Tsing's work on assemblages and collaborative survival. I consider art as research in two chapters, Chapter 2, "The Nature-Culture Divide: Making Change at the Unruly Edges," and Chapter 3, "Beyond Boundaries." These lay the foundation for the art-making components of the project, which are reported in Chapter 6, "Backyard Wilderness: the art." Following this, I describe a camera trap study and two surveys conducted in Lethbridge, Alberta, in which I asked a series of questions regarding the prevalence of wildlife in the city, and resident attitudes toward wildlife. Finally, as noted above, my art project, *Backyard Wilderness* examines the narratives we construct around our relationships with urban wildlife with the goal of advocating for coexistence. Coexistence doesn't have to be a simple celebration of the creatures that rummage through our trash cans or spray our dogs. Instead, cohabitation can be a realization that urban wildlife enhances our experiences of our yards and gardens and helps us to embrace more sustainable practices.

ETHICS STATEMENT

Work described in this thesis received research ethics approval from the Office of Research Ethics at the University of Lethbridge under the following applications:

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CHAPTER 1

INTRODUCTION

When I began my PhD studies I was in my early 50s and a practising visual artist. I had no ambition to become an academic. What I did have was a strong desire to delve into theory; to have a substantial foundation in, and better understanding of, the sciences. I wanted to learn and to have an interesting cohort with whom to share ideas. I leapt at this opportunity to explore, discover, document, and understand. Key to exploring new concepts for me involved filtering them through my art process. The enacting of theory through practice is critical to my understanding and art making is a way to do this. But I also wanted to build a foundation based on more quantifiable inputs. I wanted the art and theory to spring from material realities based on actual documented animal sightings and reported relationships. I didn't want to be fanciful. I wanted to be rigorous because I felt the stakes involved continue to be high. If people are disconnected from nature, if they don't see themselves as part of a larger mutually sustaining whole, how invested will they be in doing the work necessary for protecting our shared ecosystems?

Backyard Wilderness is a trans-disciplinary, mixed methods project concerned with whether or not we see ourselves as standing outside of nature and of acting on it—almost as though we're interlopers—or as embedded in nature as cohabitants sharing an environment and taking responsibility for our actions. It includes more traditional quantitative components such as the placing trail cameras on properties, semi-structured interviews, and two on-line surveys as well as qualitative components including artworks, installations, exhibitions, billboards, vinyl wraps, and a booklet of cartoons. This approach not only enhanced my understanding of what I was

encountering within my investigations but, hopefully, brought the project to a larger audience as a type of relationship building.

Taking into consideration that Lethbridgians, through hosting trail cameras, giving interviews, and responding to online surveys, brought the project into being, I felt it was vital that they had access to the process of exploring, discovering, documenting, and understanding the same things I had. Transdisciplinarity was, therefore, vital to my approach. Dear (2011) writes that some of the strategies of geohumanities involve

> …a proclivity to transgress disciplinary boundaries; to accumulate layer upon layer of transdisciplinary data, and then make connections; to imagine the world as well as describe it; and to produce scholarship, art, poetry, community, and politics (often simultaneously) from their works (Dear, Creative Places: Geocreativity, p. 7).

It was my intention that *Backyard Wilderness* do something similar. I wanted the project to be a combination of materiality and theory inspired by process.

The dissertation is divided into 2 parts, "Part I: Theoretical and empirical approaches to understanding the nature-culture divide," and "Part II: An artistic response to the nature-culture divide." Chapters 2 and 3, are the equivalent of a literature review, laying the theoretical foundation for what's to come. In Chapter 2, "The Nature-Culture Divide: Making Change at the Unruly Edges," I look at works that deal with this manufactured boundary. The purpose of Chapter 3, "Beyond Boundaries: An Art & Science Alliance," is to explore how and why art is research. This is not an argument to validate the use of art making as part of the overall project, but an explanation of the ways in which art functions for audiences and producers alike. Chapter 4, "An empirical survey of Lethbridge wildlife prevalence and attitudes," presents the quantitative foundation for Chapters 5 and 6, providing information about the study site as well

as the data collected from the trail cameras and surveys.[1] Chapter 5, "Understanding attitudes to Urban Wildlife: a qualitative approach," offers a qualitative look at the interviews and surveys in an effort to provide a way forward and Chapter 6, "Backyard Wilderness: the art," gives an overview of the artworks, installations, public site works, and booklet and cartoons that comprise the art making aspects of the project. Finally, in Chapter 7, "Conclusion," I argue for the importance of entanglements: *Backyard Wilderness* comes together as a collection that allows one to look at all the components of the dissertation in relation to one another without separating or pulling everything apart to the detriment of the whole.

[1] No quantitative analysis was done on the semi-structured interviews. Their primary function was 1) to refine the second survey questions and 2) to provide inspiration and raw material for the artworks, installations, exhibitions, billboards, and vinyl wraps produced. They also furnished an opportunity for camera hosts to engage with the process and ask questions of the interviewer. In these ways they proved invaluable.

CHAPTER 2

THE NATURE-CULTURE DIVIDE: MAKING CHANGE AT THE UNRULY EDGES

2.1 Introduction

As a visual artist exploring the urban ecology of a small prairie city, I have been examining how my work shifts between and across disciplinary boundaries. In particular, my interest in the nature-culture divide has evolved from a concern over whether people see themselves as part of nature or as separate from it.

For the longest time, nature was, for me, a construct that had little relevance outside of the ways that it functioned culturally. I had become detached from my childhood spent at a cabin in the British Columbian interior, wandering through the woods, searching every shadow for the outline of a black bear. My perspective of nature, as Alexander Wilson says, was "shaped by rhetorical constructs like photography, industry, advertising, and aesthetics, as well as institutions like religion, tourism, and education" (Wilson, 1991, p. 12). I centred art, specifically, as a tool to make sense of reality. On my first reading of Wilson, I missed a more nuanced interpretation, including his argument that "[h]umans and nature construct one another" (Wilson, 1991, p. 4). This argument raises the question: does nature construct us only by acting as a mirror that we hold up to ourselves, or is there something concretely *there* beyond our vision, our reality, and our existence in our environment?

Over a century ago, the dominant Eurocentric North-American culture constructed a nature that was unpredictable, dangerous, and chaotic. Our supposed shared goal was to tame it, map it, and exploit it for its resources. The resulting environmental consequences saw this campaign replaced by the need to protect and preserve. Nature is now often regarded as a pristine retreat, a virgin wilderness in need of our stewardship. In both cases, however, there is a

perception that we exist outside of nature and act upon it—that nature is, as Nicholas Jardine and Emma Spary suggest, "passive and disempowered," a kind of "slave and victim of human agency" (Jardine and Spary, 1996, p. 4). In what follows, I review work that deals with this manufactured boundary between humans and nature in hopes of pulling apart the assumption that we somehow stand outside of nature. I have chosen texts that build towards a vision in which we can query these boundaries and find a way to negotiate our place with (and within) nature as both a reality and a set of ordered relations.

2.2 Understanding Beyond Dichotomies

Much of my work as an artist over the past decade centres around questioning the nature-culture divide. As an academic, this led to an interest in interdisciplinarity and how it is affected by the boundaries between humanities, sciences, and art. Richard Rorty (1998), for instance, rejects both the idea that the sciences and humanities are fragmented, and the notion that we would get a fuller, richer picture of reality if they could only be united. Disciplines, he argues, are tools we use to interact with reality, and for different purposes, we use different tools. I would argue, however, the richest toolbox is one generated from the combination of tools from differing disciplines. As Maarten Derksen maintains, disciplines provide us with a "heterogeneous set of tools" that can give us the opportunity to examine boundaries between multiple bodies of understanding, even if they cannot give us a seamless body of knowledge (Derksen, 2005, p. 141). Social practice artists, for example, demonstrate that community-based activist work gets done at the boundaries, and that art can mobilize knowledge in ways many hard sciences cannot. This doesn't mean hard sciences can't mobilize knowledge in interesting and accessible ways, only that art provides equally interesting and accessible, though different, means of addressing audience(s).

Language is also a useful tool for highlighting multiple bodies of understanding. Nested within disciplines are words that we can use both to make sense of reality and to shape that reality (Williams 1983; Lamb 2020). Kenan Malik (2000) posits that language allows us to be so much more than nature, restoring a vision of science that returns us to the Enlightenment project, namely, a science for humanist ends. In this sense, as Derksen says, language becomes a tool for working on nature and on ourselves:

> Language, or at least our kind of language, is inextricably connected with the way we experience the world, think about it and act in it. It is more than a means of transmitting information: it is a tool that we use, and that in its use shapes us. (Derksen, 2005, p. 150)

While this focus on language feeds into my previously held belief that nature is culture, it also allows me to yet again centre art as a tool for shaping our realities and thus as a way to promote change via this shaping. (Certainly, art too is a way of both making sense of the world and a means of helping create that world.)

Instead of sustaining the nature-culture divide or erasing it, Derksen says, we need to look at the boundaries between nature and culture as a means of addressing a whole range of juxtapositions that people must navigate as part of their lived realities. In short, there are multiple divides or "a range of related boundaries being contested, crossed and moved in everyday conversations, court rooms, hospitals, laboratories, parliaments, newspapers and art galleries" (Derksen, 2005, p. 154). The aim, then, is to understand those boundaries: we need to recognize and interrogate those multiple divides — all that diversity — and its specificity, rather than looking at one specific dichotomy. Different communities have differing questions (Galison, 1997), and we don't necessarily need to dissolve the boundaries between them. We do not need to solve all the problems of these multiple nature-culture divides so much as we need to be

specific as to how these divides fit within our projects and how we use such specifications to explore the complex terrain of our research. “Rather than seeing the boundary contests over nature and culture as a problem [to be solved] . . .” Derksen says, “these contests are better accepted as inherent in the terrain” (Derksen, 2005, p. 155). What I am trying to get to here, is that this seeming divide between nature and culture doesn’t need to be resolved so much as recognized as complex in the sense that it is both historically and culturally constructed. Instead of looking to fix or pin down definitions, perhaps nature and culture are best examined as slippery and contentious terms.

2.3 Middle-Grounds

Foundational to my understanding of the nature-culture divide is “The Trouble with Wilderness or, Getting Back to the Wrong Nature” by William Cronon (1995). Cronon states emphatically that it is high time we came to terms with the word *wilderness*. Wilderness, he writes, is anything but a separate sphere from our own and is, in fact, “the creation of very particular human cultures at very particular moments in human history” (Cronon, 1995, p. 7). After giving an historical background to the construction of wilderness – via Wordsworth, Thoreau, Muir, and Turner – he points out that wilderness embodies the nature-culture divide, and that if we believe nature must be wild to be true, “then our very presence in nature represents its fall” (p. 17). We fall into the trap whereby humans cannot be part of nature because we are “culture.” If wild animals and wilderness exist as part of a nature that omits humans, that predates contact, how do we discover “what an *ethical*, *sustainable*, *honourable* human place in nature might actually look like” (Cronon, 1995, p. 17)? By idealizing wilderness as not here, not now, we lose the opportunity to engage with the wildness in the environment in which we currently live. Cronon writes:

> Most of our most serious environmental problems start right here, at home, and if we are to solve those problems, we need an environmental ethic that will tell us as much about *using* nature as about *not* using it. The wilderness dualism tends to cast any use as *ab-use*, and thereby denies us a middle ground in which responsible use and non-use might attain some kind of balanced, sustainable relationship. (Cronon, 1995, p. 21)

Admittedly, I feel uncomfortable framing this relationship in terms of *use* and *non-use* because it presents the human connection to the landscape as one in which we consume or do not consume resources. Of course we consume resources, as do all organisms, but we are neither outside of something that exists regardless of our being there, nor trapped grappling with something that is crippled or corrupted by our very presence. Nevertheless, what is key to Cronon's argument – and what ties in neatly with Derksen's point about boundaries being where the interesting work gets done – is the idea that humans occupy a middle ground where "all of us, in our different places and ways – make our homes" (Cronon, 1995, p. 21). This point is complementary to Derksen in the sense that areas of negotiation are rich sites of enquiry. For Cronon, places much closer to home offer us true experiences of nature, such as a nearby pond, a mist-covered hillside, or rewilded farmland. What he celebrates about these types of places "is not just their wildness," but that "they remind us of the wildness in our own backyard, of the nature that is all around us if only we have eyes to see it" (Cronon, 1995, p. 22). Thus, wilderness privileges some parts of nature – the unspoiled (if such a thing exists), the sublime, and the wide open – at the expense of others, like the too small, too plain, or too crowded (Cronon, 1995).

It is interesting to note that the word *wilderness* came into common usage when there was little wilderness or wild nature left (Rolston, 1997). Therefore, perhaps more than anything, wilderness speaks to a longing *for*, rather than a reality *of*. Given this, I am left wondering how the term *wilderness* can function for us. If we cannot help but drag our historical baggage around

with us, what good is the concept? Maybe if "[w]ilderness is the place where, symbolically at least, we try to withhold our power to dominate" (Cronon, 1995, 23), it can show us something about how we engage with concepts and realities that we Other. "In the broadest sense," Cronon says, "wilderness teaches us to ask whether the Other must always bend to our will, and, if not, under what circumstances it should be allowed to flourish without our intervention" (Cronon, 1995, 23). This is certainly a worthy question about our relationship to the natural world. Maybe there is a place in our understanding for a concept of pristine wilderness, even if it doesn't exist. Cronon uses the example of a tree in the wilderness helping us to recognize the wilderness in a tree on an urban lot. "Wilderness," he writes, "gets us into trouble only if we imagine that this experience of wonder and otherness is limited to the remote corners of the planet, or that it somehow depends on pristine landscapes we ourselves do not inhabit" (Cronon ,1995, p.p. 23-4). In short, recognizing the importance of a historically specific pristine nature helps us open the door to understanding where nature exists in our non-pristine backyards. We can find the residue of wilderness in the most unlikely places, and that recognition can help us redefine what wilderness means to us.

This raises another question, however: does recognizing a fuller spectrum of natural landscapes come only from a place of privilege? If I had not grown-up spending time at a cabin in a forest by a lake, would I be able to transpose my understanding of a more pristine wilderness to the city? I grew up watching *The Best of Walt Disney's True-Life Adventures* (1975, directed by James Algar) and *Hinterland Who's Who* clips (1963-1977, produced by Environment Canada Wildlife Service and the National Film Board of Canada). Were these representations enough? Indeed, without wandering through the woods with a machete and getting covered in dirt and tree pitch, my understanding of wilderness would still have been cultural, only in a

slightly different sense. The culturally constructed Canadian wilderness of my television-dominated childhood would have been enough of an understanding of wilderness because cultural representations matter. Wendell Berry says: "'The only thing we have to preserve nature with is culture'" (Berry, 1987, 138, cited in Cronon 1995, p. 24). In sum, cultural representations are the tools that help us construct who we are, as well as the reality in which we live. So, then, even a culturally fabricated pristine wilderness has its place.

2.4 Rumours of the Death of Nature

David Inglis and John Bone (2006) address the privileging of cultural lenses and experiential factors over natural, in-the-world reality. They argue that the key problem with constructionist theories is that "an over-emphasis on phenomena at the expense of at least admitting the possible existence of the noumenal properties of physical forces [i.e., things as they really are], can lead to bizarre, and sometimes deeply politically unfortunate consequences" (Inglis and Bone 2006, p. 284). Yes, biotechnologies, genetic manipulations, and cyborgs challenge the separation of nature and culture; however, climate change, loss of biodiversity, a thinning ozone layer, deforestation, pollution, and the general degradation of ecosystems point to the importance of rethinking the relationships between human societies and a supposedly pristine nature. Inglis and Bone assert that while the world is changing, this doesn't mean the nature-culture divide is no longer an important distinction, a boundary worthy of maintaining out of life-preserving necessity. They accuse social scientists of "disciplinary imperialism" and interpreting "domains traditionally ceded to natural sciences" solely in "terms of their own socio-cultural construction of things" (Inglis and Bone 2006, p. 284). Here they refer to a Heidegger quote with which they begin their article:

> Man . . . exalts himself and postures as lord of the earth. In this way the illusion comes to prevail that everything man encounters exists only insofar as it is his

> construct. This illusion gives rise in turn to one final illusion: it seems as though man everywhere and always encounters only himself. (Heidegger 2002, 332, cited in Inglis and Bone, 2006, p. 272)

As Inglis and Bone point out, social scientists, when they look at the world, "see only themselves and their own reflections" (Inglis and Bone 2006, p. 284). What does all this mean for examining the complicated, perhaps crucial, maintenance of boundaries? Inglis and Bone conclude that "despite claims to the contrary, rumours of the final death of nature have been greatly exaggerated" (Inglis and Bone, 2006, p. 285), or, in other words, the realities of nature can still overwhelm our cultural lives whether we believe nature is a social construct or not.

In "Ideas of Nature" (1972), Williams writes that the most important point to be made about the nature-culture divide is that the separation of man and nature is "a function of an increasingly real interaction" (82). If humans and nature do indeed construct one another, we are so entangled that we can't separate ourselves into the abstract concepts of human and nature. We need to recognize that these abstract concepts are actually between humankind-as-economics and nature-as-ecology. For Williams, the struggle is with us and our need to conquer, dominate, and exploit – an approach that doesn't work at any level, not for the environment, nor for ourselves. "If we alienate the living processes of which we are a part," Williams says, "we end, though unequally, by alienating ourselves" (Williams, 1972, p. 84). In the end, he argues that we need to come up with new ideas because we need new, better functioning relationships. I would argue that there is so much history, so much mutual reinforcement between the concepts of "human" and "nature," that we cannot abandon these concepts when they have been, and continue to be, extremely useful in terms of highlighting intersections, connections, and locations where environmental work and decolonization needs to be done.

2.5 Nature as Practice

Having discussed boundaries as a place where we can examine multiple perceptions of nature – nature as difference (the Other), nature as a reality, nature as a construction – what I wish to address now is nature as practice. This view emphasizes that nature is constructed not just theoretically, but also literally (Vogel 1998). In other words, we busily manufacture spaces, places, and institutions that end up collectively coordinating us. Steven Vogel writes (1998) that the construction of nature has to be viewed as concrete human labour:

> The social world is perfectly real and physical: social institutions are produced and reproduced through concrete activities, and are instantiated in concrete objects every one of which has to be built, while on the other hand the practical processes of building through which those institutions and objects come to be are themselves always socially organized ones. (Vogel, 1998, p. 175)

Thus, a philosophy of practice must deal with our built environment, the reality of the objects of our own creation that surround us. For Vogel, the built environment is where environmental theory should begin to tackle wilderness. By looking at wilderness in this way, we can look at the complexity of social practices that construct it. And this is key: those complex social practices do include things like "boundary-drawing" (Vogel, 1998, p. 176). They point towards the ways in which we are socially organized.

Vogel argues for deconstructing the constructed character of nature. Such critiques acknowledge our own relationship to the world. Deconstruction is a useful foundation from which to critically build something new because being able to look at all the historical, social, and economic moving parts is essential. There is something highly retrievable from the idea of practices. If, as Vogel points out, our existing practices have gotten us into trouble with the environment, then we need to look to other, more healthy sustainable practices to save our

proverbial bacon (Vogel 1998). In short, we need to do a better job at constructing a healthier world for all species. This is where theory moves into practice.

Vogel addresses the fear that focusing on practices will mean we'll fail to acknowledge the Otherness and thereness of the world. For example, isn't focusing on practices just another way of focusing on ourselves? To this he answers:

> I don't think so; to say we construct the world that surrounds us in our practices is not to say we dream up some way we want the world to be and then find it magically transformed accordingly; it is to say that we try to build it in a quite literal and physical way. Practice is real; it involves difficulty and sweat and, quite possibly, failure. (Vogel, 1998, p. 177)

I want to underline Vogel's assertion that the constructions that create the world are practical ones — that our places are constructed, in part, by our activities in them. Nonetheless, this doesn't mean we can create the world any which way we want: "What distinguishes practice from theory is that the former is real, difficult, concrete . . . and nature might be the name we give to that very concreteness" (Vogel, 1998, p. 179). This is appealing because it states outright that this gives us a great opportunity to deal with reality in a better way through concrete practices that can enable change. Nevertheless, I am cautious. The rabbit under the deck exists whether or not I know it is there. Its material reality preceded my discovery of it. Maybe our yard, with a house, with a deck, allowed it to survive, but the actual creature is a being that exists without my social practices. My practices only relate to my understanding of it, how I impact it, how I might change its reality.

2.6 Collaborative Survival

Returning to Derksen, there are multiple divides being questioned and challenged in our everyday lives in relation to our bodies, customs, associations, and institutions. If the goal is to understand those boundaries, then we need to acknowledge and question all that diversity and its

specificity rather than focussing in on one particular divide. As stated earlier, different groups of people have differing questions and concerns and that's okay. We don't necessarily need to dissolve the boundaries between them, we just need to think in terms of our projects and how they function within them.

It is here that I turn to Anna Lowenhaupt Tsing's use of collaborative survival as a way to move forward. In *The Mushroom at the End of the World,* Tsing writes that "we are stuck with the problem of living despite economic and ecological ruination," yet "[n]either tales of progress nor of ruin tell us how to think about collaborative survival" (Tsing, 2015, p. 19). Instead, she argues, the Anthropocene — which began not with our species, but with the advent of modern capitalism — entangles us with "ideas of progress and with the spread of techniques of alienation that turn both humans and other beings into resources" (Tsing, 2015, p. 19). These ideas separate us out from other species and mask possible ways to mutually benefit from our coexistence. Thus, anthropocentrism obscures all the interesting prospects for transformation found around the "unruly edges" (Tsing, 2015, p. 20).

So, how do we shift from centring ourselves to recognizing, listening to, and responding to Otherness? Tsing asks: "What if precarity, indeterminacy, and what some of us imagine as trivial are the centre of the systematicity we seek?" (Tsing, 2015, p. 20). Precarity, she says, shifts us from the status quo, which is leading us down a dangerous path, towards the possibilities of the variable and adaptable, something that might make life more possible. Critically, however, these possibilities are far removed from the categories and assumptions of progress entrenched in capitalism. If we are stuck in a framework that is failing us, she suggests, perhaps we might look at all the "world-making projects" we've been ignoring up until this point (Tsing, 2015, p. 21):

> [H]uman conceit is not the only plan for making worlds: we are surrounded by many world-making projects, human and non-human. World-making projects emerge from practical activities of making lives; in the process these projects alter our planet. To see them, in the shadow of the Anthropocene's "anthropo," we must reorient our attention. (Tsing, 2015, p.p. 21-22)

After this Tsing introduces the concept of assemblages. She points out that ecologists use assemblages to pull apart the idea of a unified, rigid, and circumscribed community. (Indeed, the term is used in many urban ecology papers: Fortwangler 2013; Collard 2011; Ellington and Gehrt 2019; Ramalho and Hobbs, 2012.) In the work of Bruno Latour, assemblages are "strange hybrids" created from familiar pairings like "society and science, politics and nature, subjects and objects, social constructions and reality" (Latour, 2004, 22, cited in Luckhurst 2006, 4). They demand new ways of thinking, comparing and contrasting old, familiar concepts with other old, familiar concepts in new pairings. How species assemblages influence each other is complex: "some thwart (or eat) each other," Tsing writes; "others work together to make life possible; still others just happen to find themselves in the same place" (Tsing, 2015, p.p. 22-23). What is key is that assemblages are not neat, tidy, and contained; they are fluid and open-ended. Thus, they have the potential to be more than the miscellany that come together to form them (i.e., they are greater than the sum of their parts).

I propose we adopt the idea of assemblages as hybrids that make room for new and messy collaborations at the borders between disciplines. Key to this idea, however, is that assemblages are not about collapsing borders, but about maintaining useful ones. Derksen's argument that we should avoid the urge to integrate disciplines, as the boundaries between them are where all the interesting work gets done, is well founded. Tsing, similarly, helps us to see that there is a whole shed of tools that can be used in previously unfamiliar ways to address the unruly edges. For instance, the precarity that Tsing writes about may point to art practices that are a form of social

activism. Instead of seeking to achieve equilibrium, socially engaged artists do not shun moments of resistance, and often grapple with the tensions of political, ethical, and material uncertainty. Such practices, and the art experiences that result from them, have the capacity to demonstrate how Tsing's tools might function. For example, Guelph-based artist Lisa Hirmer's *Weather Stories* (organized by the University of Lethbridge Art Gallery together with project partners October 2022 – September 2023, https://www.weathercollection.ca/weather-stories/) combine multiple perspectives from a range of story tellers with varied backgrounds and distinct lived realities.

In art, use of the term *assemblages* is familiar: assemblages are literally a form of art involving combinations of found objects with or without custom-made elements. In theory, this definition can be expanded to include the way in which new existences/realities can be made. In my art practice, I use taxidermy sourced from roadkill to facilitate the possibility of new associations by simply putting the form of an actual synanthropic animal in a white box gallery setting. I also use collage coupled with hand drawings to juxtapose a variety of elements in an attempt to create strange hybrids of familiar elements in new pairings.

As Tsing writes, "World-making projects emerge from practical activities of making lives" (2015, p. 22). So, instead of getting caught up with in the notion of progress, of always looking forward with predictable goals, we can also look horizontally, or in unfamiliar directions, to see other ways of being. And these opportunities can involve practical ways of coexisting with other species. Tsing's methodology points us towards a way of being in which nothing is "too small, too plain, or too crowded" that it cannot be reconfigured, reworked, and reimagined into world-making projects (Cronon, 1995, p. 22).

CHAPTER 3

BEYOND BOUNDARIES

3.1 Introduction

> A work of art does not answer questions, it provokes them; and its essential meaning is in the tension between the contradictory answers. – Leonard Bernstein, *The Infinite Variety of Music*

Why is it so easy to see that science is research and more difficult to argue the same about art? The key difference is that it's straightforward to see the significance of answers and much more difficult to put a value on wandering down the metaphoric garden path. One of the shared realities of art and science is their asking of questions. In the case of science, this questioning generates knowledge, which then prompts further inquiry. Art, on the other hand, leads to reflection and connections that loops back to further questioning. The American philosopher Alva Noë writes, "Scientists ask questions and produce answers. Philosophers and artists, in contrast, raze answers in the quest for concealed questions…" (Noë, 2023, p. 204). Science, according to Noë, is a field in which practitioners know what their answers mean, whereas art is often intentionally obfuscatory (Noë, 2023, p. 204). But if there is no resolution, where do the questions come from, and on what basis are more questions generated? While the work of art may not be to provide tangible answers, it does provide experiences. For pragmatist philosopher John Dewey, these experiences are aesthetic in the sense that they have a beginning and a meaningful conclusion (1934/2005). One says that they've had an experience. It began here and ended there. What happened in-between can indeed be quite obfuscatory, with all sorts of wandering, traversing, and to-ing and fro-ing. It is this questioning part that art and science share, they just do it with different intentions. Science scrutinizes and investigates in an attempt to get at answers, whereas art pulls things apart and examines them for the sake of pulling things

apart and examining them. We just tend not to value process as much as product, and art is all about process.

The purpose of this paper is to explore how and why art is indeed research. Not to legitimize art making, but to help understand the ways in which art functions for both producer and audience. In what follows, I explain how the boundary between art and science first emerged during the Enlightenment through the rise of an "objective" scientific self. I continue by drawing on a variety of theories, including Dewey's (1934/2005), framing of making and perceiving as experiences embedded in the everyday. Building on this recognition that perception is essential to making, I proceed to the work of Noë, who posits that art organizes us and, in so doing, makes us into the people that we are (2015b). This discussion of art as a "strange tool" is important as it reinforces Dewey's work on perception as an act of reconstructive doing. I then transition to philosopher Clive Cazeaux's argument that art is not just visual but is also conceptually framed as "artwork" (2017). Next, I explore anthropologist Tim Ingold's call for a better correspondence *with* the world in which we live (2013). This, I maintain, provides us with a useful approach for the artist as researcher. Finally, I investigate a more inclusive definition of research that could facilitate boundary-traversing between the disciplines. Cazeaux's description of research as organized work leading to new insights and, importantly, as being acknowledged by members of a specific community to be doing so, is foundational to this exercise.

3.2 Disciplines and Identities

Prior to the Enlightenment, the arts and sciences were not distinctly delineated. Daston and Galison (2010) argue that the emergence of the scientific atlas in the eighteenth century can be seen as an example of setting the standards of both scientific objectivity and the scientific self. Atlases from the 18th through the 19th century were not what we think of as atlases now. Instead

of being compilations of maps, many were more in line with illustrated encyclopedias, addressing bodies of knowledge and providing ideal representations of types of specimens. To make these archetypical images, artists had to learn how to see specimens and then depict them in a refined, cultivated way. This Enlightenment phenomenon was placed in opposition to the artistic self, beginning in the mid-19th century, by distinguishing between a supposedly objective, will-less observer and a subjective, willful artist. Nevertheless, despite their claims to a type of will-less objectivity, atlases were filled with aesthetic judgements (Daston & Galison, 2010). The atlas artists, many of whom were women, were *taught to see*, to make choices, and to render non-specific drawings that were emblems of a whole class of samples from nature. This training involved a saturation in previous atlas images and the constant refinement of editing out anomalies. "The image was as much an emblem of a whole class of objects as a portrait of any one of them" (Daston and Galison, 2010, p. 104).

With the advent of photography in the nineteenth century, a shift occurred: naturalists no longer needed artists to speak for nature; nature could now supposedly speak for itself. This shift further deepened the chasm between self-regulated, meticulous observers who used mechanical reproductions to render their specimens authentic, and the atlas artists who made choices to emphasize and simplify in the name of better general representative understandings (Daston and Galison, 2010). This is not to say that photography created mechanical objectivity, or that the "truth-to-nature" approach favored for atlases ever disappeared. Photography is manipulable, and choices continued to be made at the level of framing and editing. It is just to say that objectivity was the goal, and photography was seen as key to depicting a detailed specimen rather than a type. Drawing was seen as only an interpretation of variety, whereas photography could deal in the specific.

A scientific self takes form by being practiced and not just conceived. Modeling a certain type of self through practices such as keeping lab notebooks, drawing specimens, habitually monitoring one's own hypotheses, and focusing one's attention shaped the type of scientist that emerged during the Enlightenment and gave birth to the seeming distinction between scientific objectivity, where the will is regulated, and artistic subjectivity, where the will is asserted (Daston and Galison, 2010, p. 198). But can the self ever be denied? Are scientists' choices to see in certain ways any more objective than the choices made by artists? In partial answer, objectivity seems to enter the equation, not at the level of seeing, but at the level of recording and then communicating what has been seen. Even if seeing were without distortion and even if repressing the willful self were not attainable, nevertheless these were goals to strive for. Mechanical objectivity was about more than (hypothetically) neutral photographs, it was also about the language of science: experiments and statistics (Daston and Galison, 2010, p. 256). The identity of the scientist was not a suppression of the self; it was a formation of the self through methods and technologies. Theirs is the journey to, or the pursuit of, objectivity laid bare, with all its ways of seeing and representing.

3.3 Art and the Everyday

In the early 19th century, the Enlightenment gave birth to Romanticism and an emphasis on the individual and their subjectivity. I think here of Eugéne Delacroix's bare-breasted "Liberty Leading the People" (1830) (figure 3.1) where Liberty, goddess-like, strides forward with a rifle in one hand and a flag in the other. Before her lies the bodies of fallen patriots. The viewer is treated to a scene filled with movement, drama, and passion.

Figure 3.1, “Liberty Leading the People,” oil on canvas, 102” x 128,” 1830. Wikimedia Commons, public domain: CC0 1.0.

During this period, there was also a focus on nature, but it was nature as unpredictable and capable of violent natural forces. For example, in Caspar David Friedrich's "The Sea of Ice" (1823-1824) (figure 3.2), depicting a shipwreck in the artic, the ship is significantly obscured by enormous sheets of jutting ice. Although these two works vary in terms of subject matter, what they do impart is an intensity of feeling. It is this sense of emotional upheaval, and a freer style, that unifies Romanticism as a movement.

Figure 3.2, Caspar David Friedrich, "The Sea of Ice," 38” x 50,” 1823-24. Wikimedia Commons, public domain: CC0 1.0.

On the heels of the Enlightenment and Romanticism (and by way of the Pre-Raphaelites, Realism, Impressionism and Post-Impressionism), art was freed from the rigors of representational image-making and thus was increasingly removed from everyday experience (E. Barrett, 2007). Art was about exploring its own tactility, aesthetic properties, and the identity of the producer. Whereas science was increasingly seen as objective, fact-based, and empirical, the artist became immersed in a sort of ethereal aesthetics, an aesthetics that sought to deny the material conditions of its making by indulging in a sort of disembodied musing. In short, art and artists were all about themselves.

But artistic practice generates ways of knowing far beyond that of "art for art's sake" or art for pure consumption. John Dewey sought to restore art objects to the conditions of their origin, and their operation in experience, by pointing out that pre-modern, pre-high art for its own sake would not have even been understood prior to the Enlightenment (E. Barrett, 2007). Not unlike Walter Benjamin (1935), Dewey acknowledges the specific socio-economic and historic conditions that gave rise to this disembodiment, namely nationalism, imperialism, and capitalism. Art became a way of amassing cultural capital rather than simply being a product of aesthetic experience embedded in the realities of day-to-day living. Thus, Dewey's goal was "to restore continuity between the refined and intensified forms of experience that are works of art and the everyday events, doings, and sufferings that are universally recognized to constitute experience" (Dewey, 1934/2005, p. 2). Art for its own sake, separated from the everyday, was unable to address real life conditions when it was relegated to the indulgent remoteness of philosophical introspection. Attention to experience as the driver of relevance gave Dewey's vision of art an applicability that fits nicely with today's social activist artmaking.

Art and science are based in the experience of a situation embedded in a setting. The key distinction between the two is what Dewey describes as the difference between where the emphasis falls in terms of the rhythm of being, of interacting with the environment. To clarify, for Dewey (1934/2005), life is about overcoming conflict and achieving equilibrium: it's about resolving tensions. Because artists focus on resolving conflict and tensions, they do not shun moments of resistance but, rather, rest in its tensions. By contrast, he says, scientists are motivated by a need for resolution and the desire to move onto further inquiries. Thus, unlike science, art is the process of becoming and of tangling with the tensions. It's not unlike John Keats' "negative capability," written in a letter to his brothers in 1817. Although Keats does not

clearly define what he means by this phrase per se, the body of the letter explains: “the poetical character as having ‘no self—it is everything and nothing—It has no character—it enjoys light and shade; it lives in gusto be it foul or fair, high or low, rich or poor, mean or elevated…’” (Lau, 2006, p. 85). In short, beauty and grandeur are meant to be privileged over the quest for levelheaded convictions.

While I would argue that science also likes a good tangle, I do see a difference in motivation, where empirical research is inspired to answer questions rather than rest *in* the tensions. Scientists have a supposition, which generates a question, for which they hopefully engage in real-life conditions to generate a possible answer. But answers aren’t the final word. They generate further suppositions, which generate further questions, which one attempts to answer. This is also a process, just one with a different, resolution-motivated goal.

Carey Bagdassarian (2009), however, points out that there are consequences for field researchers whose “observations must be rendered finally into mathematical language to secure scientific validity” (Bagdassarian, 2009, p. 1639). His concern is that there is a divide between the intellect and the experiencing body when all experience is rendered into mathematics. Bagdassarian worries that this reduction causes one to choose to pull from the ecosystem only that which is simple enough to be rendered mathematically, not that which is experienced. “Perhaps we [researchers] are aware,” he says, “that we are tacitly assuming that mathematics is smarter than nature” (Bagdassarian, 2009, p. 1640). His lament is that, to do the math, one must separate from one’s lived experience of the natural world: “my analysis—as important, useful, and as elegant as it may be—remains a caricature of what I’d experienced” (Bagdassarian, 2009, p. 1640). He concludes that science needs art to overcome the mind/body split between what is experienced and what is rendered through mathematics. What Bagdassarian overlooks here is

that there is not a mind/body split, per se, but two differing, complementary approaches. My point is not to argue that mathematics is any more of a model of the world than is a work of art. Scientists and artists alike make choices, and each medium/method—whether it be mathematics or, say, performance art—has its limits and advantages. However, not all ways of rendering are equally valued. While artists get valuable material for their curricula vitae (as well as new venues and audiences) from collaborations with scientists, scientists do not profit in the same way through an association with artists (Kemp, 2011). This has recently changed, in that although scientists may not get the same level of professional credit, they do get a valuable means of knowledge mobilization. So, the argument that there is clearly a disparity in the value of arts versus science in academia is shifting. What remains the same is that, while scientists may come to believe that they too are artists, artists are not similarly credited with being research scientists (Kemp, 2011).

3.4 Art as Experience

Further to my argument that a key difference between art and science is their purported motivations, I turn to Michael. F. Dahlstrom (2014). Dahlstrom argues that narratives help general audiences better understand complex scientific concepts. Narratives, he argues, are better able to communicate "cause-and-effect relationships between events that take place over a particular time period that impact particular characters" (Dahlstrom, 2014, p. 13614). Of interest is his argument that, while logic-based scientific communication provides abstract truths that are valid across situations, narratives are context-dependent. This certainly isn't universally true: logical-scientific communication is frequently context-dependent, as certain "truths" can be found to be true only in certain contexts. However, if narratives do indeed derive meaning from "the ongoing cause-and-effect structure of temporal events," and so makes them harder to break

down into components (Dahlstrom, 2014, p.p. 13614-5), then this is precisely where I see art entering the equation. This is exactly what art does. Art can play with narrative fragments and open-ended narratives by putting interpretation back onto audience members/participants. This also resolves one of the key problems that Dahlstrom identifies with narratives, namely that they are so powerful as to be inherently persuasive.

While narratives may indeed be one way to successfully communicate science to broader audiences, they may also serve to underestimate the audience if they lock them into a linear, step-by-step chronicle with a closed terminus—or, as Dahlstrom describes it, the "triumvirate of causality, temporality, and character" (Dahlstrom, 2014, p. 13614). This approach may have its place in mass-media news stories about science, but it fails to ask the receiver of the information to critically engage or bring very much to the table. Here again I return to Dewey and advocate for an understanding of experience (1934/2005). Experience, like a narrative, is a unified whole. It is individual and self-sufficient, which is not to say it is a plot-driven march towards an easily digestible conclusion: "In an experience, flow is from something to something. As one-part leads into another and as one part carries on what went before, each gains distinctions in itself" (Dewey, 1934/2005, p. 38). These distinctions may even be moments of rest, but, regardless, carry on as enduring unities. Conclusions, if reached, are not separate and independent; they are the product of a series of occurrences—and here is the key: an experience is aesthetic. It extends beyond being an intellectual exercise to being about a person's interaction with an environment.

It is this aesthetic, this experience, that has its own special quality (Dewey 1935/2005, p. 39). It distinguishes an artwork from something that may be intellectual, but whose signs or symbols have no intrinsic quality of their own. Something can proceed from one part to another with a mechanical connection and lack aesthetic-ness. To be aesthetic is to have a meaningful

conclusion. It is to be able to say, “I’ve had an experience”; it began here and ended there. And these beginnings and endings can be different for different people. This isn’t a one-way, conduit-style model of communication where the artist has a message, sends it via the artwork to the audience, and the audience receives it. Process is important; the process of perceiving is as important as the process of making. One isn’t privileged over the other. This differs from narrative in that, although it has a beginning and an end, as Noë points out, the middle is a bit messy (i.e. obfuscatory).

It is here, specifically, that Dewey works for me in terms of conceiving of my own practice. The artist must think of their audience during the process because the act of making is not completed with the simple production of an art object. The art object does not exist in a vacuum, nor does it selfishly exist for the gratification of the producer. As Dewey asserts, the artist thinks about the perceiver while creating. To be art, it must be created as part of a conversation, not as a monologue. Thus, perceiving is connected to making and is as active as the making of the art object: “There is inception, development, fulfillment” (Dewey 1935/2005, p. 57. Art is the completeness of the flow between these three stages. And perception is something beyond recognition:

> But receptivity is not passivity. It, too, is a process consisting of a series of responsive acts that accumulate toward objective fulfillment. Otherwise, there is not perception but recognition. The difference between the two is immense. Recognition is perception arrested before it has a chance to develop freely. In recognition there is a beginning of an act of perception. But this beginning is not allowed to serve the development of a full perception of the thing recognized (Dewey, 1934/2005, p. 54).

Here I am not denying the materiality of an artwork. Yes, the art object exists as a physical thing (or a performance) taking up space (or time). It can still be a commodity, an historical item, or a decoration. But it does not enact its function as a process, worked out, developed, and fulfilled.

For Dewey, perception is “reconstructive doing” (Dewey, 1934/2005, p. 54) which is not to be confused with merely putting building blocks back together into an art form based on a how-to-assemble guide supplied by the artist. In order to perceive, audience members must create their own experience. The artist selects, simplifies, clarifies, abridges, and condenses, and audiences must also go through all these stages according to their own history, point of views, and experiences. Noë sums this up nicely: “We ourselves—eyes, bodies, feet, and all—are at work in the field of play. And this is manifestly so, that is, it is reflected in the very manner in which anything ever shows up in experience. The world does not show up as presented on a viewing screen; it shows up as the situation in which we find ourselves” (Noë, 2012, p. 3). Or, even more concisely: “Perception is not something that happens to us, or in us. It is something we do” (Noë, 2004, p. 1).

3.5 Art as a “Strange Tool”

Alva Noë writes, “It isn’t only that we use tools; we *think* with them” (*Strange Tools: Art as Human Nature*, Hill & Wang, 2015, p. 22). This statement clearly connects to Andy Clark and David Chalmers arguments regarding the extended mind, which propose that cognitive processes are not solely in the head but extend out into the environment (The extended mind, *Analysis*, 58(1), 1998, p. 8). Their famous example of Otto using his notebook to find his way to the Museum of Modern Art clearly demonstrates the point that cognitive processing can be external as well as internal. Otto has Alzheimer’s disease and as a result must use information available in the environment, and more specifically his notebook, to structure his life. For Otto, the notebook serves as his memory. Wishing to visit the Museum of Modern Art, he consults the notebook for the address. Just as someone without Alzheimer’s may rely on their biological memory, Otto relies on the external memory of his notebook. Both Otto and a person with a functioning

memory therefore share a belief that they know where the museum is located, and this belief precedes the actual consultation of the internal memory or the external notebook. Thus, "[t]he information in the notebook functions just like the information constituting an ordinary non-occurrent belief; it just happens that this information lies beyond the skin" (1998, p. 13). Similarly, in an episode of TV series, *The Closer,* Louie Provenza (G. W. Bailey) abruptly goes to a storage closet and starts rummaging through a stack of his old notebooks (2007, Grave doubts, Season 3, Episode 2). When asked what he is doing, he answers: "Remembering."

This approach to technology, such as Otto's or Provenza's notebooks, is crucial to Noë's arguments regarding art as a strange tool. According to Noë, "technologies are themselves evolving patterns of organization. Technologies organize us, and in doing so, they make us the kind of creatures we are" (p. 24). He gives several examples of this, including how we are organized by the technologies of door handles and contemporary air travel. The door handle organizes our movement within and between spaces, by affecting how we are able to enter into them and exit from them. We don't think about using door handles, we just reach out, grab them, and turn, thus facilitating our movements through our homes, workplaces, etc. As for air travel, if you take away the plane, the computer systems, the towers, the airports, and the entire support system for commercial air travel, you don't get people who fly differently, you get people who don't fly. Take away door handles and planes and we wouldn't be who we are. As Noë states, "The point . . . is that technologies are coordinate with who and what we are, with what we know how to do" (p. 25). They allow us to think in and understand the world in ways we would not otherwise conceive.

Noë links this notion of organisation to art, by arguing that the purpose of the latter is to bring the way our lives are organized into view and, in so doing, reorganize us. There are two

levels involved in this process. At Level 1, there is the organized activity or technology, and at Level 2, the organization of the first level "gets put on display and investigated" (p. 29). To help explain how certain activities organize us, Noë uses the examples of dance and choreography. Dancing is "natural," "spontaneous," and can be described as something that "just happens" (p.p. 11-12). When you are dancing, you are undertaking a cognitively complex activity while simultaneously doing something basic and unrehearsed. Noë thus describes dancing as emergent. We get caught up in dancing and can become easily lost in the activity. We dance but we are also being danced. Thus, we are organized by the dance itself.

Choreography, on the other hand, is not about the act of dancing; it is about performing and presenting the dance. According to Noë, choreographers don't make up dances, they *stage* dances: "When a choreographer stages a dance, he is representing dancing. That is, he puts dancing on display" (p. 13). In this sense, choreographed dance appears to be dancing when, in fact, it is about the showing of the dance. This makes choreography crucial because it is showing how the act of dancing organizes us; it is not about the dancing so much as it is about demonstrating that we are dancers. Organizing activities are behaviors in which we become absorbed and dancing absorbs us; thus, "Choreography is a practice for investigating our absorption" (p. 15).

This is the case for all the arts. As choreography is an example of staging dance, an exhibition of artworks is also an opportunity to demonstrate, to reveal and highlight, the ways in which we find ourselves organized. An exhibition, if it is well-staged, brings into view an organized and engaged activity.

As Noë argues, tools only have significance in the contexts of their embedding in our behavioural and social settings. The job of art is to remove tools from such settings and make

them *strange*. When we dislodge tools, we bring to light the ways in which they have been embedded. As a result, art exhibits us to ourselves and allows us to catch ourselves in the act of bringing the world into focus. Noë goes on to explain looping by referring to the two levels of organization and reorganization, or the activity and the staging of the activity. At the first level we are trying to make sense of ourselves from within the activity and at the second level we are outside the activity, at the level of representation, trying to make sense of how we are being reorganized. This second level loops back down and informs the first level, which in turn informs how the activity is staged in the future: "This, then, is the manner in which [the activity] reorganizes. It reorganizes because it gets consumed and digested and reworked at the first order" (p.p. 31-32). It is a constant looping of organization at the level of the activity, organization at the level of staging or presentation, and reorganization back at the original level of the activity.

American philosopher and psychologist John Dewey writes that esthetic experience is perception (*Art as experience*. Pedigree, original work published 1934, 2005). Drawing on Dewey, Noë writes, "Aesthetic responses . . . are not symptoms or reactions or stable qualities. They are actions. They are modes of participation. They are moments of conversation" (2015, p. 133). Art is not about objects; it is about the work of engagement. This reminds me of something said by curator and gallery director, Marc Mayer, in an episode of *CBC Ideas*: "The artwork is just the match. Your brain is the cigar" (The forest floor of the art world: Marc Mayer at MOCA, in *CBC Ideas*. CBC Radio One. https://www.cbc.ca/listen/live-radio/1-23-ideas/clip/15773206-the-forest-floor-art-world-marc-mayer-moca, 2020). I wouldn't have used the word "brain," as it reinforces the concept of a mind/body split, but you get the general idea. For Dewey, art is all

about experience as an ongoing activity in the relationship between artist, art object, and perceiver. Noë describes this as an organizational practice.

Noë writes: "Artworks are dead in themselves, like mere noise or useless stuff. We bring them to life by putting them to work in thought, conversation, and appreciation" (p. 137). This is very much in line with Dewey's argument that "We speak of perception *and* its object," but perception and the art object are built up and completed in one continual operation (p. 184). Artworks do not exist in a vacuum. In fact, they don't function as art without an audience. The artist creates in an environment that informs their process, the viewer/listener perceives in an environment that informs their understanding, and there is no work of art without the dialogue between the artist and the viewer/listener. This may seem like an extreme statement. But art is art in its truest sense when it is viewed, listened to, perceived. Otherwise it is commodity, historical object, or decoration. (I think of museum visitors grappling for opportunities to take selfies in front of well-known paintings without looking at them, all while ignoring lesser-known neighbouring works.) Art is created in the act of perception in the same way, and with equal importance, as it is created in the act of its own production. This attention to art needing to be enacted is important in terms of understanding not only its role as research, but also how it functions alongside other forms of research. Science too must be understood as a process of organizing and reorganizing, as is clearly seen with the emergence of the scientific self in the 18th and 19th centuries. So too does the knowledge generated by science when mobilized.

3.6 Art as Research

In *Art, Research, Philosophy* (2017), Clive Cazeaux traces the origins of contemporary art as research to the beginnings of audit culture in universities in the mid-1980s. As government funding became tied to research projects and concrete, applicable outcomes, art departments

were suddenly forced to justify their fit with the economic and industrial forces tied to monetizing and standardizing academic research (Cazeaux, 2017, p. 2). This led to several anxieties for artists firmly embedded in the modernist *avant-garde*, not the least of which was asking how art practice, which is believed to be rooted in subjectivity, produces knowledge, or offers tangible outcomes. Cazeaux sees artistic research as a positive outcome for the arts and the theory of knowledge, challenging the idea that simply because art as research emerged from a conservative, results-based culture, it is doomed to serve that same culture, becoming just "another piece of product in the knowledge economy" (Cazeaux, 2017, p. 3). He points out that this "cause-and-effect" model is far too simplistic and that art as research can outgrow the conditions that gave rise to it.

Cazeaux goes on to explain that the theories of knowledge that advocate for art as a stand-alone temple of subjectivity (aka "art for its own sake") are the product of Modernism. He points to Dewey as the lone example of a theorist who attempts to address the question of art as knowledge and critiques others who affirm "that art must be understood and appreciated for the way it operates *on its own terms*" (Cazeaux, 2017, p. 12). This approach has promoted art as conceptually pure and self-contained, which, as a result, means it cannot connect its audience to anything beyond its own sanctified sphere. It is this understanding of art as something that works independently that creates barriers between art and knowledge.

Cazeaux has much to offer in terms of crossing, and indeed blurring, disciplinary boundaries, arguing that margins should not be sealed so tightly as to be beyond traversing. Disciplines are "hybrids, with knowledge sets that may have very specific application in that disciplinary area, but which also draw their methods and definitions from other disciplinary domains" (Cazeaux, 2017, p. 14). He critiques Dewey for struggling to explain how an aesthetic

experience can work at the level of the everyday. Key to his problem is the assertion that Dewey's model has experiences existing for their own sake. Cazeaux asks whether an experience can adopt a more general, sharable language without losing the very thing that make it special and unique. This is not my reading of Dewey. As explained earlier, Dewey situates art in practice, maintaining a grounding in real, everyday conditions and situations:

> The sources of art in human experience will be learned by him who sees how the tense grace of the ball-player infects the onlooking crowd; who notes the delight of the housewife in tending her plants, and the intent interest of her goodman in tending the patch of green in front of the house; the zest of the spectator in poking the wood burning on the hearth and in watching the darting flames and crumbling coals. These people, if questioned as to the reason for their actions, would doubtless return reasonable answers. The man who poked sticks of burning wood would say he did it to make the fire burn better; but he is none the less fascinated by the colorful drama of change enacted before his eyes and imaginatively partakes in it (1934/2005, p. 3).

Yes, experience is aesthetic, but this is based on real-world interactions with the environment. It is situational. The experience is a journey.

Setting this disagreement aside, Cazeaux is correct that the art for its own sake "promotes the idea of a self-sustaining whole that does not require academic or verbal contextualization" (2017, 17). This leads to two problems: 1) that perceiving art is so special and unique that it "cannot be captured in a knowledge-claim"; or 2) art as knowledge transcends verbal description, and it is unfair to expect it to be rendered explicable in academic (or any other) language than its own (Cazeaux, 2017, p. 18). Art is not, however, cut off from language or theory any more than it is separate from lived experience. Cazeaux is clear about this when he points out that an artwork isn't just visual, but conceptually framed as an artwork. To understand it as such, the viewer/listener utilizes a vocabulary that extends beyond the moment of perception to place it within a context. The problem arises when we expect it to be rendered comprehensible in a

language that isn't fit for purpose—in other words, the language of science: "But herein lies one of the main epistemological objections to artistic research: the subjective, associational, poetic leaps and juxtapositions that define art do not lend themselves to measurement or the consistent, conventional vocabulary that would be used in observation statements based on measurement" (Cazeaux, 2017, p. 27). In short, we shouldn't expect art to be relevant *only* in terms of its relationship to science or via scientific language.

3.7 A Definition

Cazeaux (2017), through an examination of explanations of art as research from various sources, states that the art-science debate proves that other forms of knowledge exist, and that, while we might not all use the same theories or methods, there are a series of domains where disputes between the disciplines are recognized. For Cazeaux, research is bigger than science (narrowly conceived) and needs to be considered in other non-scientific terms.

So then, how does one define research? Here Cazeaux draws on three institutional definitions: 1) the Frascati Manual, 2) the Research Excellence Framework (REF), and 3) the University of Toronto's Faculty of Research and Innovation (Cazeaux, 2017, p. 41). After reviewing these definitions, he pulls out two common themes: research is "a systematic process of investigation" and the "generation of or addition to knowledge" (Cazeaux, 2017, p. 41). Condensing the three definitions he comes up with a characterization of research as "creative work undertaken on a systematic basis that leads to new insights, acknowledged by members of a subject community" (Cazeaux, 2017, p. 43).

For me, the appeal of this definition is that creativity isn't simply about producing something new or cutting edge (the avant-garde); instead, it is about "generating ideas that critique or destabilize established thinking," or that "change or add to established thinking in

ways that are acknowledged to be informative or beneficial" (Cazeaux, 2017, p. 43). However, this definition depends on the artwork being received and acknowledged by its intended audience. For example, an artist may believe their work is undertaken in a systematic way and provides new insights into an area, but if their community rejects it or fails to acknowledge it, it loses status as research. This doesn't mean that the research must be universally recognized throughout academia, only that it must be recognized by its intended, critically engaged audience. It has been quite rightly pointed out that research still occurs when it is not recognized as such, and this is true. But it is not given the status of research unless there is critical engagement. To clarify, Cazeaux outlines possible ways of recognition: "journals, conferences, [and] exhibitions" (Cazeaux, 2017, p. 43)—and to this I would also add exhibition catalogues.

3.8 A Complementary Approach

Tim Ingold seeks to undermine the split between data and theory, a divide which he argues is foundational to science. This leads him to explore the unique ways in which theorists and artists create:

> We cannot make the future . . . without also thinking it. What then is the relation between thinking and making? To this, the theorist and the craftsman would give different answers. It is not that the former only thinks and the latter only makes, but that one *makes through thinking* and the other *thinks through making* (Ingold, 2013, p. 6).

While I would argue that artists do both of these things (think through making and make through thinking), Ingold's point is that artists, through making, allow others to engage with art objects, sounds, and performances in a way that also makes meaning, via what Dewey would describe as perception. Craftsmen allow knowledge to grow through engagement with other beings and the environment. It is this interaction with the things around us and situations that Ingold describes as "an *art of inquiry*" (p. 6). This method is about perceiving/responding to the world. These

things happen simultaneously. To perceive is to respond. What Dewey might call "reconstructive doing," Ingold describes as a relationship with the world called "*correspondence*" (p. 7). For Ingold, we don't need to simply acquire more and more knowledge *of* the world; what we want is a better correspondence *with* it.

It is here that Ingold provides us with a perfect methodology for the artist as researcher. That is, he substitutes "the anthropology *of*" for "an anthropology *with*." This embraces practices rather than objects as the focus (p. 8). The question might be: substituted by what? With the interrelationships between being, perceiving, thinking, and making. Ingold states outright that "[l]earning is understanding in practice: exploring the interrelations between perception, creativity and skill" and that the art of inquiry means thinking through observation, rather than after it (p. 11). Correspondence *with* means breaking away from a simple, self-determining model of art for art's sake (the monologue). It means embracing a dialogue *with* not just materials or other artworks but also with other species, other people, other possibilities, and our shared environment.

Science too benefits from this shift. Here, science may look to creativity via artmaking, not because science is a caricature of the world, but because, like art, it also seeks to correspond *with* rather than fix knowledge claims as conclusive or absolute. Just as art may look to science as a way of making possible the discovery of answers that prompt further inquiry, science may look to art to better conceive of an *art of inquiry*. Arnold Arons discusses the necessity of having a rich theoretical domain in which to define and refine scientific problems/inquiries (Arons, 1969, p.p. 31-35). To discover insights, Arons answers, we must "have the opportunity to examine what happened, to relive some of the intellectual experience, and to analyze and assess the lines of thought, recognizing its strengths and its limitations" (Arons, 1969, p. 33). The lines

of scientific studies do not pop into existence fully formed and formulated, rather they are worked on and worked out. Results are provisional, not final, he asserts. Just as art doesn't exist in a vacuum, nor does science.

Finally, I would like to conclude with the following explanation of why art is research:

> This brought to mind Zora Neale Hurston's encouraging pronouncement that "research is just formalized curiosity. It is poking and prying with a purpose," a statement that I find invaluable when trying to help people get their head around the idea that a work of art is simultaneously a research project. The idea seems just too slippery to grasp for a lot of people; you can research *for* a project, you can do research *about* an art project, but how can art itself be research? Easy, I say, as I haul in Zora to provide the backup I need. If research is just formalized curiosity, how could art be anything *but* research? (Barrett, L., Poking and prying with a purpose: The working art of Donald Lawrence. In D. Lawrence, J. Mills, & E. Dundas Oke (eds.), 2021, p. 285).

Although I heartily support and advocate for Zora Neale Hurston's inclusive approach, I emphasize Clive Cazeaux's (*Art, Research, Philosophy*, Routledge, 2017) argument that research includes acknowledgement by your peers as to what constitutes research. This is not to say that research must meet some staunchly defended academic standard, only that the work is formalized curiosity and is meant to be shared. Here, I think of a recreational birder who is active in a local naturalists' group and communicates the data they have collected over the years to the group; or the so-called hobby artist who creates botanical illustrations and belongs to an amateur artists' club. If both poke and pry with a purpose, correspond with their environment, and meet the criteria of thinking about their audience, how can what they do be anything but research? Maybe this is precisely what Hurston means by "with a purpose."

CHAPTER 4

AN EMPIRICAL SURVEY OF LETHBRIDGE WILDLIFE PREVALENCE AND ATTITUDES

The following chapter focuses on three distinct bodies of data collected during the project. These arose from 1) the placement of trail cameras in yards, 2) a survey to determine what animals people reported seeing and what factors influenced the likelihood of animals appearing, and 3) a follow-up survey to address absences from the first survey around demographics and to expand on, inter alia, influential factors regarding attitudes. I begin by introducing the study site and detailing my methods (in which I outline how I structured the quantitative aspects of the project). I then present the results to several questions that arose during the forming of the methods as well as throughout the study periods. I conclude with a brief discussion.

To be specific, I asked: What animals are appearing in front and backyards throughout the city? What time of day and month of the year are they likely to appear? What factors influenced the likelihood of animals appearing in yards? What signs did people report that indicated the presence of animals? What were people's attitudes towards the urban wildlife that visited? And what realities and issues influenced these attitudes?

While the main goal of the project was to address whether or not people see themselves as embedded in nature, a complementary goal was to get a better understanding of Lethbridge's wildlife through an attempt to pinpoint what animals show up in what locations and why they did do so. A supplementary aim was to better understand how their presence and behaviours impacted attitudes towards them.

While my curiosity and anticipation over the project led to hopes that more of the “rarer” mammals (coyotes and badgers) would make an appearance, I was also optimistic that common species would be represented in the numbers expected. This did not mean I failed to be excited by each animal that appeared in the digital photos taken by the trail cameras. In fact, it was these sightings, as well as listening to interview commentaries, that led to a special affinity for striped skunks.

4.1 Study Site

Both the trail camera study and the surveys were conducted in Lethbridge, Alberta, Canada (49° 41' 39" N and 112° 49' 58' W). Lethbridge is on the traditional territory of the Blackfoot, within Treaty 7 lands, and is home to the Metis Nation of Alberta, Region III. It has a population of 106,550 and is divided into three geographical areas: West Lethbridge (population 43,793), South Lethbridge (population 33,309), and North Lethbridge (population 29,448) (City of Lethbridge, 2023). Located along the Oldman River, the city is 23.3% parkland and has 30 hectares of green space per 1,000 residents (Beeber, 2023). Definitionally, then, it is both urban and cosmopolitan (Statistics Canada, 2024).

Bisected by the Oldman River, Lethbridge is known for its extensive trails and pathways linking parks and other green spaces and has one of the largest urban park systems in North America. The riverine conduit and its associated habitats, together with Lethbridge’s physiographic location on the interior plains, underpins its associated peri-urban and urban vertebrate fauna (figures 4.1 and 4.2).

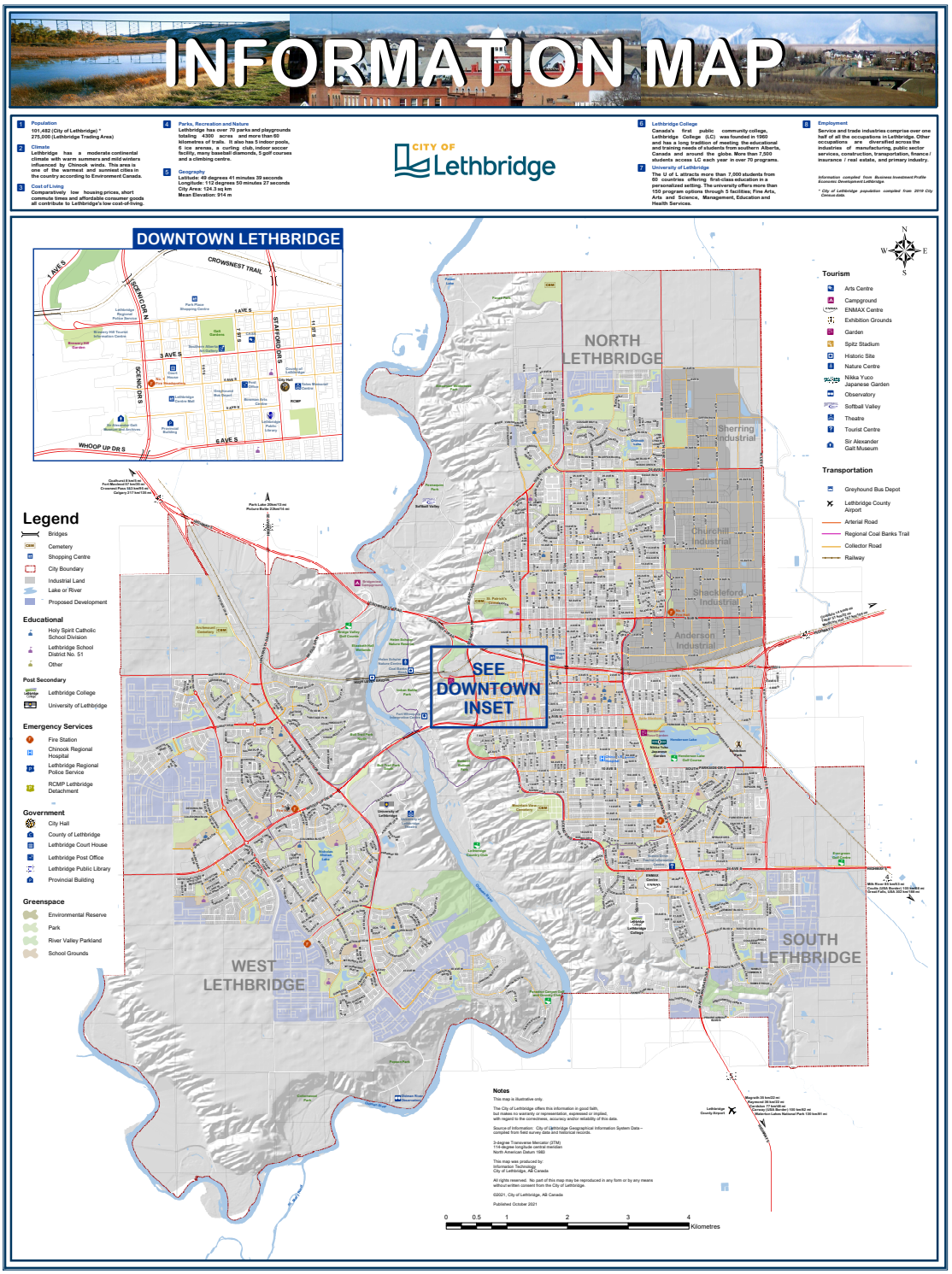


Figure 4.1. City of Lethbridge map, © 2025 City of Lethbridge, Open Data Licence.

Figure 4.2. Alberta map (© onestopmap.com). Permission to reproduce obtained.

This includes, but is not limited to,

- American badgers (*Taxidea taxus*),
- mountain cottontails (*Sylvilagus nuttallii*),
- coyotes (*Canis latrans*),
- mule deer (*Odocoileus hemionus*),
- Richardson's ground squirrels (*Urocitellus richardsonii*),
- white-tailed jackrabbits (*Lepus townsendii*),
- Canadian porcupines (*Erethizon dorsatum*),
- raccoons (*Procyon lotor*),
- striped skunks (*Mephitis mephitis*),
- blue jays (*Cyanocitta cristata*),
- black-capped chickadees (*Poecile atricapillus*),
- American crows (*Corvus brachyrhynchos*),
- dark-eyed juncos (*Junco hyemalis*),
- Eurasian collared-doves (*Streptopelia decaocto*),
- northern flickers (*Colaptes auratus*),
- common grackles (*Gracula quiscula*),
- house finches (*Haemorhous mexicanus*),
- house sparrows (*Passer domesticus*),
- black-billed magpies (*Pica hudsonia*),
- red-breasted nuthatch (*Sitta canadensis*),
- ring-necked pheasants (*Phasianus colchicus*),
- American robins (*Turdus migratorius*),

- European starlings (*Sturnus vulgaris*),
- great horned owls (*Bubo virginianus*),
- Swainson's thrushes (*Catharus ustulatus*),
- white-crowned sparrows (*Zonotrichia leucophrys*),
- a variety of gulls (*Larus spp.*),
- prairie rattlesnakes (*Crotalus viridis*),
- and western tiger salamanders (*Ambystoma mavortium*).

4.2 Study Design

4.2.1 Trail Cameras

I recruited participants who were willing to have a trail camera on their property through social media (Facebook, X, and Instagram), mainstream media (local newspapers and television news), a brochure (appendix A), and word-of-mouth. Thus, yards and participants formed an opportunity sample, not a systematic or stratified sample. As might be expected, this resulted in uneven sampling, with fewer yards and participants from North (16% or 8) and West Lethbridge (32% or 16) than South Lethbridge (52% or 26). I attempted to compensate for this by reaching out to local media outlets with a press release, hoping to elicit responses from a wider range of people, but still found North and West Lethbridge residents to be less responsive. I placed trail cameras (Stealth Cam G42 No-Glo Trail Game Cameras) in 50 yards[2] throughout the city. Cameras were situated in a maximum of 6 yards at a time over the period of the study (February 15th, 2017, to January 13th, 2020). I interviewed 48 of the camera hosts (one host declined to be interviewed and the other site was the university). The yards were monitored as requests to host came in and were placed for a matter of days or weeks depending on the likelihood of captures.

[2] Yards are defined as the property in front, side, or back of the home owner's/renter's residence.

This likelihood was assessed based on interview information as well as the presence of seeming attractants in the yard. Three yards were chosen to host for a full-year. I also placed a camera on the University of Lethbridge grounds, as many students live in residences on campus. Regions were further categorized by neighbourhoods, as defined by the City of Lethbridge. The 27 South Lethbridge participants came from 12 neighbourhoods (out of a total of 21 possible neighbourhoods); the 16 West Lethbridge participants came from 10 neighbourhoods (out of a total of 14 possible); and the 8 North Lethbridge participants came from 5 neighbourhoods (out of a total of 17 possible) (City of Lethbridge Neighbourhood Maps, https://www.lethbridge.ca/media/hzgfxvsm/neighbourhoods.pdf).

Cameras were screwed or strapped onto a fence, other structure, or tree, with the bottom being 8-10 inches from the ground. This proved to be the optimal level for capturing most species. Excluding the 3 cameras placed for approximately a year (IDs BB, NH, and STR), they were stationed in yards for an average of 24.5 days (again, length of placement depended on the number of possible attractants present, such as proximity to green spaces). “Captures” and “sightings” describe each episode of an animal appearing. This is not each recorded image, but each occurrence of the same animal. If it was obviously the same bird appearing in several consecutive images, that counted as one capture or sighting. One yard from each region was chosen to host a camera for a full year, based on a moderate- to high-level of wildlife activity during the initial placement. For example, one such property, described as the “deer nursery” by the host, was located along a green strip linking to a large West Lethbridge park. From host reports and camera captures it was identified as a place where injured mule deer sought refuge from possible predators and where pregnant does gave birth. The yard was open at the front and surrounded on three sides by fencing and contained several large trees as well as bushes. No food

or water were provided for the deer before or during the camera placement. Thus, this "deer nursery" became an obvious choice for more extensive monitoring. Again, this means my sampling was not systematic, but as this was an exploratory study, rather than one aiming to test specific hypotheses, the non-random placement is justified.

From these data, I determined the number of total sightings (1,964 overall across the 50 yards), which were then categorized as either birds or mammals. These were used to estimate the number per area of the city, per neighborhood, and according to the time of day and year. I adjusted all sightings to account for sampling duration (i.e., if one camera captures 52 sightings of a skunk and another captures only four, this cannot be taken to demonstrate that there is actually a difference across yards and locations if the former camera was present for a year, but the second camera was present for only four weeks—thus, I adjusted the number by sightings by the duration that the camera was present). I determined the distance (meters) to green spaces for each yard, defining green spaces as coulees,[3] parks, cemeteries, and green walking paths/corridors within neighbourhoods. I determined and plotted how green[4] each neighbourhood was in each region of the city. I then determined and plotted the metres to a thoroughfare/roadway[5] for each yard in each neighbourhood.

Each positioning of the camera would result in a dozen to a thousand plus images, depending on the location and the windiness of the days during install. If the wind was 20 km – 120 km during placement it would move tree branches, plants, and grasses triggering the camera. This could result in checking 1,000+ images per placement for any signs of visiting animals. All "empty" photos and photos of humans and pets were deleted.

[3] Coulees are defined as dry ravines caused by erosion from water flow.
[4] Green refers to parks, green strips with walking paths within neighbourhoods, and coulees.
[5] Thoroughfares are defined as a major city or intermediary neighbourhood paved roads/arteries.

4.2.2 Statistical Analyses of Trail Camera Data

I constructed two Bayesian multilevel models using the 'brms' package (Bürkner, 2021) in R 4.2.0 (R-Core-Team, 2022). I ran the 'pp_check' function in 'bayesplot' (Gabry & Mahr, 2024) to assess model performance. I used $\hat{R}$s to confirm convergence ($1.00 \leq \hat{R} \leq 1.02$), and the 'mcmc_area()' function from "bayesplot" to visualize posterior distributions. I calculated conditional and marginal R^2 values using the 'bayes_R2' function (Bürkner, 2021). All plots were made using 'ggplot2' (Wickham, 2016), 'ggridges' (Wilke, 2018), 'bayesplot', and 'likert' (Bryer and Speerschneider, 2016). Because the analyses are Bayesian, I'm using credible intervals (CIs). My indicator is 95% CIs that do not cross zero. This means the posterior mass is entirely on one side of zero. CIs that crossed zero indicated uncertainty about the effect.

My trail camera analyses were conducted on the data collected between February 15th, 2017, to January 13th, 2020. Data used in this set of analyses included: trail camera photos which were coded for the presence of mammals and birds, time of day, time of year, area (West, North, South), neighbourhood, distance to green space (meters) and distance to thoroughfare (meters). Backyard identity was retained as a random effect to account for repeated measures.

What factors influenced the likelihood of mammals appearing in yards?

In this analysis, I used a Bayesian multilevel regression model with a Bernoulli distribution to investigate the factors influencing the appearance of mammals within city limits. I included time of day, time of year, location (both the region of the city and the neighbourhood), meters to green space, and meters to thoroughfare as fixed effects. Backyard identity was included as a random intercept. The presence of mammals (Y/N) was used as my outcome variable. I used weakly informative priors (normal (0, 1)) and ran four chains and 1000 iterations to ensure convergence.

I used pp_check to determine if the model was well specified. Rhat was 1.00-1.01 and the model explained 41% of the variance. I re-levelled for July.

What factors influenced the likelihood of birds appearing in yards?

In this analysis, I employed a Bayesian multilevel regression model with a Bernoulli distribution to assess the factors influencing the appearance of birds within city limits. The presence of birds (Y/N) was the outcome variable. I included time of day, time of year, location (both the region of the city and the neighbourhood), meters to green space, and meters to thoroughfare as fixed effects. Backyard identity and respondent ID were included as random intercepts. Rhat was 1.00 – 1.01 and the model explained 42% of the variance. I re-levelled for January.

4.2.3 Semi-Structured Interviews

I conducted semi-structured interviews with each camera host typically directly before the placement of the trail camera in the yard. People who agreed to have cameras placed on their property were asked a set of seven questions and encouraged with further prompting to expound. The questions were as follows:

- What makes you suspect there may be wild animals visiting your property?
- Do you think there are any aspects of your property that make it attractive to wild animals (such as composts, gardens, garbage receptacles, pet food, water features, and possible shelter locations)?
- How do you feel about animals visiting your property? Do you think of them as pests or do you like the idea of them visiting? Can you elaborate on why you feel one way or the other?
- Is there anything else you'd like to tell us about the animals that visit your property and/or how you feel about wild animals being present within city limits?

- Would you like us to send you digital copies of the images of the animals we find visiting your property, if we find any? (Please provide an email address.)
- Would you be willing to have us revisit your property with the camera(s) during other seasons?
- To which age-range category do you belong: 18-31, 32-45, 46-59, 60-73, 73-86, and 87+?

These interviews took approximately 5 - 30 minutes to conduct and were recorded by an Olympus VN-722PC digital voice recorder. I explained that participants were to be identified in the study by a pseudonym and approximate age range. They were also be told they could discontinue participation at any time, including before the camera(s) were installed or at any point when the camera(s) were on their property. They were asked to read and sign a consent form (appendix B).

The length of the interviews varied greatly depending on the interviewee. Some people were more inclined to expand on their answers, sharing stories of wildlife encounters, providing hearsay stories, and commenting, inter alia, on policies relating to animal control and euthanasia. Interviews were transcribed by an assistant as well as by me, utilizing Otter.AI (version 3.60.1-241007, 2024).

4.3 First Survey Period

During the period in which I was placing the cameras (February 15th, 2017, to January 13th, 2020), I conducted two on-line surveys using SurveyMonkey (SurveyMonkey, https://www.surveymonkey.com). The first survey was designed to determine how many respondents had animals visiting their yards, what kind of attractants were present, and what their attitudes were towards wildlife within city limits. Responses were collected from March

25th to December 18th, 2017, and included 10 questions based on the in-person interview questions (appendix C). It was advertised on Facebook and received 1,143 responses.

The survey was a mix of open-ended and Likert scale-style questions. The open-ended responses were categorized and assigned numerical values as being positive (1), mixed (2), neutral (3) or negative (4). This was applied to the following open ended survey question, "How do you feel about animals visiting your property? Do you think of them as pests or do you like the idea of them visiting?" These categories were further defined as follows: Positive: all aspects of the comments are positive in nature, no negatives were brought up by the respondents; "Mixed": comments containing both positives and negatives; "Neutral": comments which skewed neither positive nor negative; "Negative": comments that were antagonistic to animal presence, with no positives being raised.

I approached the question of attitudes this way to elicit more detailed and rich responses that would later influence art-making and more qualitative analyses. I then categorized them to be able to provide the information in a concise manner. In the second survey I did both to simultaneously allow for more streamlined responses as well as more comprehensive and evocative ones. This turned out to be a successful and preferred method as I achieved both goals without using the possibly subjective process of assigning attitudes to statements.

4.3.1 Statistical Analyses of First Survey

What do people report as attractants that bring animals to yards?

In this analysis, I employed a Bayesian multilevel model to assess the factors that respondents believed to be contributing to the presence of animals in yards. The presence of animals (Y/N) was used as my outcome variable. I included location, fruit trees, berry bushes, bird feeder, compost, garbage, grass, woodpile, water source, garden, food source, deck/shelter, and other

attractants as fixed effects. The model incorporated a random intercept for respondent ID. I used weakly informative priors (normal (0, 1)), did a Bernoulli distribution, and ran the model with four chains and 5000 iterations to ensure convergence. I used pp_check to determine if the model was well specified. Rhat was 1.00 and the model explained 13% of variance.

4.4 Second Survey Period

The second survey was conducted between January 28th, 2020, and November 8th, 2021, and compensated for limitations in the first by acquiring additional information on demographics and asked more specific questions. The survey included 51 questions (appendix D). The second survey, also presented using Survey Monkey, was advertised on Facebook and received 278 responses. Additional information about the participants collected in this survey included: age, gender, type of residence, geographic area where respondent resided, what size community respondent was raised in, level of education, and whether respondent was a hunter/trapper and/or a bird watcher. The main objective of this survey, however, was to get more detailed responses as to how people viewed specific animals. To address attitudes towards wildlife, respondents rated specific animals on a Likert scale: 1. intensely dislike, 2. dislike, 3. mildly dislike, 4. neutral, 5. mildly enjoy, 6. enjoy, and 7. enjoy very much.

4.4.1 Statistical Analyses of Second Survey

What factors attracted a variety of mammals (deer, skunks, raccoons, rabbit and/or hares, coyotes, porcupines, badgers, mice, ground squirrels, or other mammals) to yards?

In these analyses, I employed a Bayesian generalized linear mixed model to assess the factors contributing to the presence of a variety of mammals in yards. The presence of these mammals (Y/N) were used as my outcome variable. I included the factors compost, fruit trees, other trees, grass, woodpile, water, vegetable garden, flower garden, garage, shed, and deck as fixed effects.

The models included a random intercept for respondent ID. I used weakly informative priors (normal (0, 1)), with a Bernoulli distribution, and ran the model with four chains and 6000 iterations to ensure convergence. I used pp_check to determine if the model was well specified.

What factors attracted a variety of birds (magpies, crows, gulls, chickadees, robins, starlings, grackles, blue jays, flickers, woodpeckers, great horned owls, Swainson's hawks, or other birds) to yards?

I employed Bayesian generalized linear mixed models to assess the factors contributing to the presence of a magpies, crows, gulls, chickadees, robins, starlings, grackles, blue jays, flickers, woodpeckers, great horned owls, and Swainson's hawks in yards. The presence of a variety of birds (Y/N) was used as my outcome variable. I included the factors compost, fruit trees, other trees, grass, woodpile, water, vegetable garden, flower garden, and bird feeder as fixed effects. The model included a random intercept for respondent ID. I used weakly informative priors (normal (0, 1)), did Bernoulli distributions, and ran the models with four chains and 6000 iterations to ensure convergence. I used pp_check to determine if the model was well specified.

4.5 Camera Trap Results

4.5.1 Species Recorded

The trail cameras recorded a total of 1,964 sightings across 50 yards between February 15th, 2017, and January 13th, 2020. There were 829 captures for West Lethbridge, 771 captures for South Lethbridge, and 364 captures for North Lethbridge. The three yards that hosted a camera for a year yielded 1103 captures for 53% of the overall sightings.

As listed above, I recorded 25 distinct species. Mammal species were all synanthropic and not commensal.[6] One camera host asked to have the trail camera set up in his garage, where mice were prevalent. These images were not included in the study. The camera was later placed in the host's yard and these images, which included skunk sightings, were incorporated into the results.

While 25 distinct species were recorded, there were 26 groups (this included a "bird" category as a catchall for birds that could not be identified due to poor quality images). Of the 26, 17 were birds and 9 were mammals. No snakes or tiger salamanders were sighted, although a tiger salamander was reported by one host. (This total absence could be due to the cameras usually being placed 8-10 inches off the ground.) The most common birds were magpies (337), common grackles (174), and robins (117). The least recorded bird species were a red-breasted nuthatch (1), chickadees (2), ring-necked pheasants (3), and house finches (3).

Eurasian collared-doves, an invasive species that moved north after introduction to the Bahamas in the 1970s, were recorded 100 times, whereas crows accounted for 33 sightings. This is likely due to the year-long placement of a camera in Hardieville (North Lethbridge) where there were permanent Eurasian Collared-Doves. This yard had 63 sighting over January (9), March (29), April (18), July (1), August (1), and December (5). I would frequently see Eurasian Collared-Doves on the power lines when I went to switch out the trail camera's memory card and/or replace its batteries.

4.5.2 Adjusting by the Rate Trail Cameras Appeared in Yards

[6] "(i) commensal species, such as rats and mice, that actively benefit from human-derived food supply; and (ii) synanthropic species, those that share and profit from the human ecotype, but which are not dependent on a human-derived food supply" (Baker & Harris 2007, 299).

As explained above, I normalized the data to account for the different periods of time cameras were present in each yard. Instead of factoring the total number of sightings, I calculated the rate per day, giving a clearer picture across different yards. Adjusting the rate let me compare the activity level of animals across different periods, ensuring that longer-monitored yards didn't dominate the analysis simply because they were monitored for longer. (See figures 4.2 and 4.3 below for the results of this adjustment by region.)

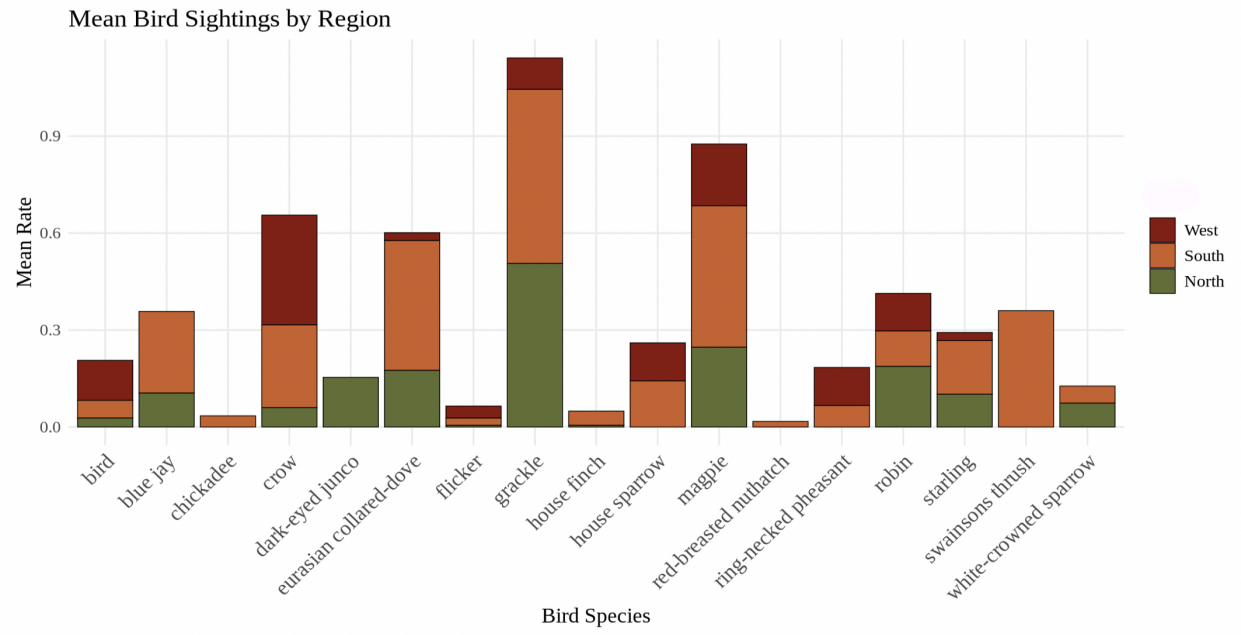


Figure 4.3, Rate of bird species sightings in yards (rate adjusts for the duration that the camera appeared in each yard). The mean rate is a rate and not an actual count of what animals were present. It is normalized over days and averaged across yards in each region.

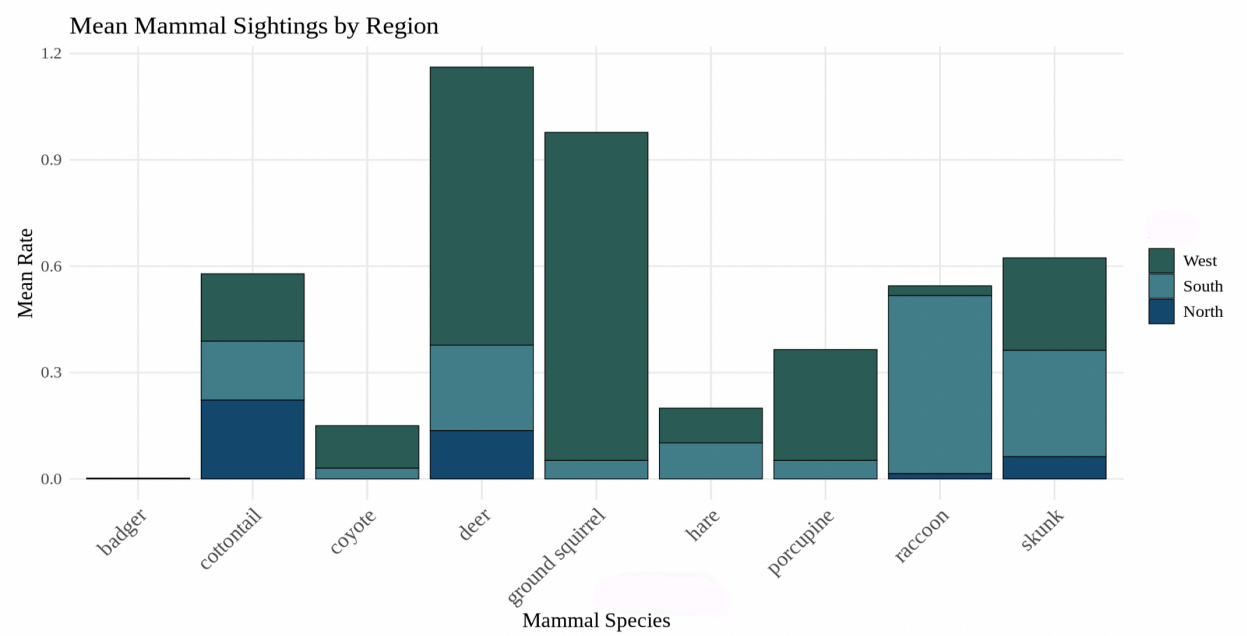


Figure 4.4, Rate of mammal species sightings in yards (rate adjusts for the duration that the camera appeared in each yard). The mean rate is a rate and not an actual count of what animals were present. It is normalized over days and averaged across yards in each region.

4.5.3. Sightings by Time of Day

There were no surprises regarding the most common times for birds and mammals to be captured by the cameras (figures 4.5 and 4.6). Bird activity was most pronounced in the morning during and immediately after the dawn chorus and dropped off dramatically at nightfall. Given that many of the most sighted animals are crepuscular, mammal activity was most pronounced at dawn and dusk.

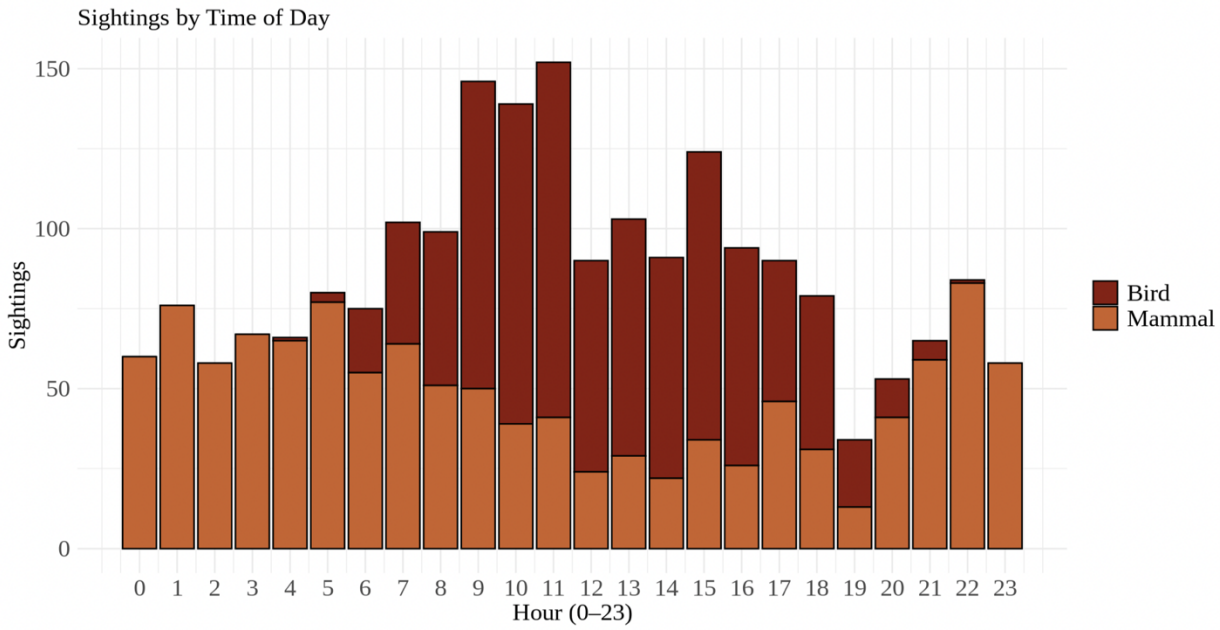


Figure 4.5, Sightings of birds and mammals by time of day. The light orange-brown bars represent the presence of mammals and the dark orange-brown bars indicate the presence of birds.

4.5.4 Sightings by Time of Year

In terms of time of year of sightings, the most recorded mammals either did not hibernate (deer) or only entered torpor (skunks and raccoons). Of the most common bird species, magpies and Eurasian collared-doves did not migrate. Grackles did migrate and, to some degree, robins did as well (figure 4.6).

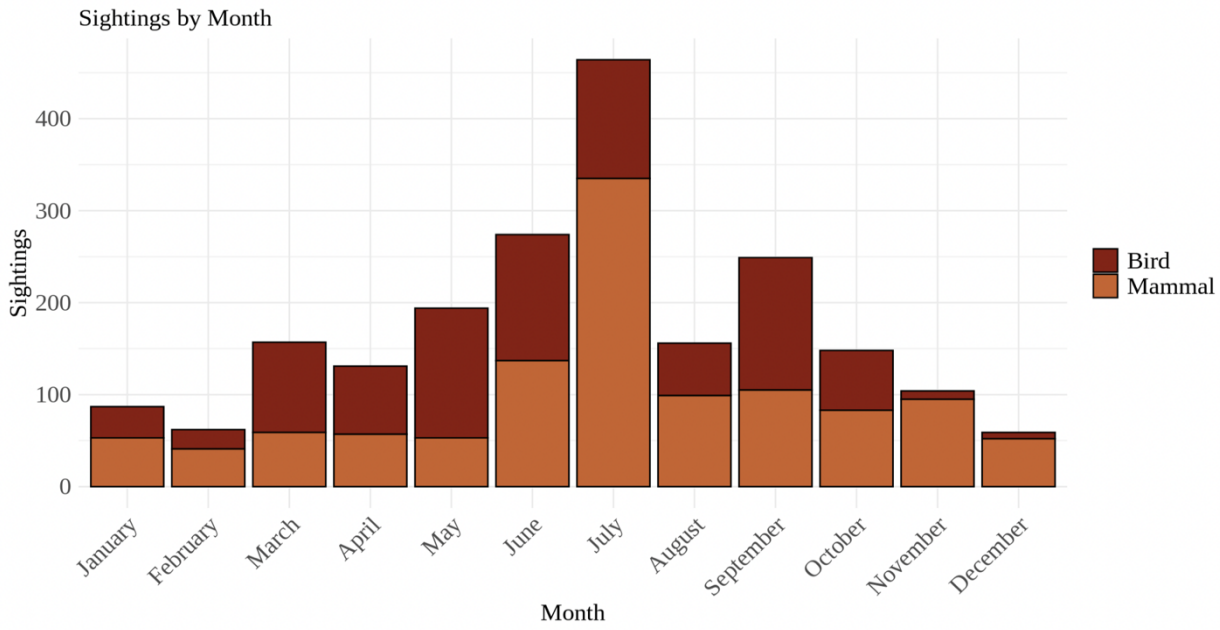


Figure 4.6, Sightings of birds and mammals by month. The light orange-brown bars represent the presence of mammals and the dark orange-brown bars indicate the presence of birds. Thus, one can see mammals were mostly sighted in July, whereas birds were rarely present in December.

4.5.5 Factors Influencing Species Richness

The average number of species per yard was 3.94. Unsurprisingly, the 3 yards that hosted a camera for a year had the most diverse range of animals visit (table 4.1):

Table 4.1, Range of animals recorded in yards that hosted for a year.

Yard ID	*Days Camera was in Yard*	*Range of Animals Recorded*
BB	359	Bird, Crow, Deer, Eurasian Collared-Dove, Flicker, Grackle, House Finch, Magpie, Raccoon, Robin, Skunk.
NH	332	Bird, Coyote, Crow, Deer, Eurasian Collared-Dove, Flicker, Grackle, Hare, House Sparrow, Magpie, Raccoon, Robin, Skunk, Starling.
STR	419	Badger, Bird, Deer, Eurasian Collared-Dove, Flicker, Grackle, Hare, Magpie, Raccoon, Robin, Skunk.

Whereas properties with less time in yard tended to have the least range of sightings (table 4.2):

Table 4.2, Range of animals recorded for yards that hosted for under 2 weeks.

YARD ID	*Days Camera was in Yard*	*Range of Animals Recorded*
CC	11	Crow
MK	13	Magpie
SS	13	Skunk

4.5.6 Factors Influencing Likelihood of Animals Appearing in Yards

What factors influenced the likelihood of mammals and birds appearing in yards?

Time of year (specifically, the fall and winter months of September, October, November, and December) were found to positively influence sightings (figure 4.6), while summer months had a negative influence. More sightings were made in the London Road area, an older, denser neighbourhood adjacent to downtown and the coulees. Hour, area, meters-to-green, and meters-to-thoroughfare had little or no effect.

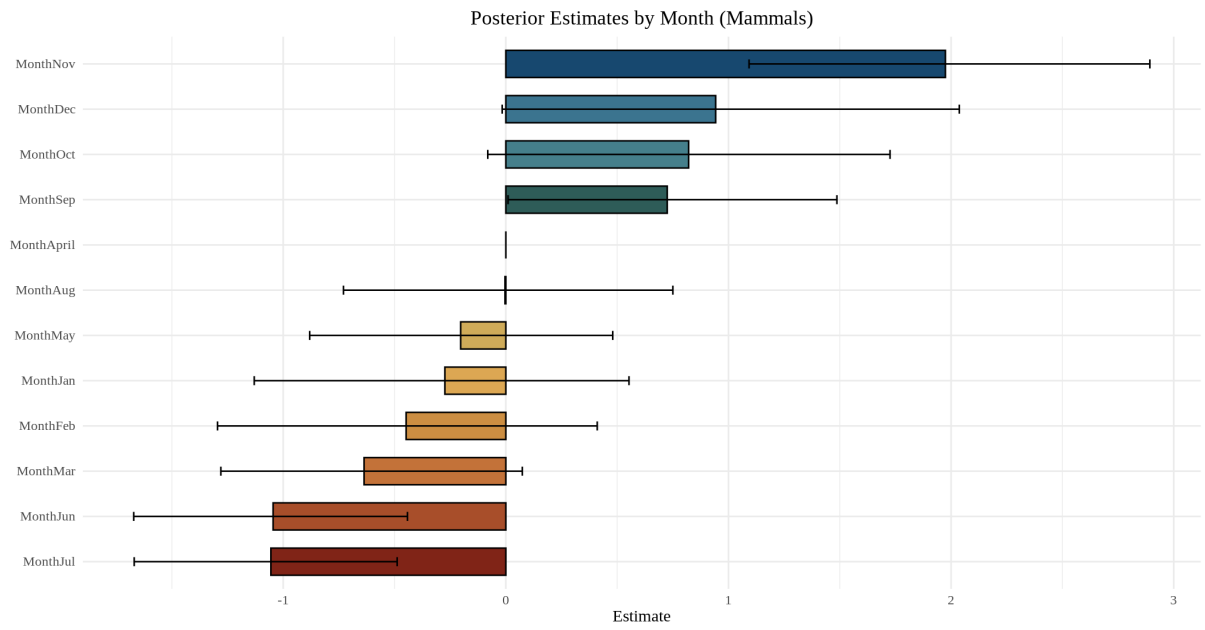


Figure 4.7, Posterior estimates by month for mammals. The coloured portion of each bar represents the point estimate. The point estimate is the best guess based on the data. If the coloured bar lies entirely above zero, the effect is positive. If it lies entirely below zero, the effect is negative. The thin black line represents the credible interval. If the thin black line crosses zero, the effect is uncertain. For example, one could say mammals were most likely to be sighted in November and least likely to be sighted in June and July. The rest all cross zero.

I then asked the same question of birds (figure 4.7). The time of year, specifically November and December, was found to negatively influence sightings, and location (i.e., London Road) had a negative effect of -1.20. Hour, area, meters-to-green, and meters-to-thoroughfare had no effect.

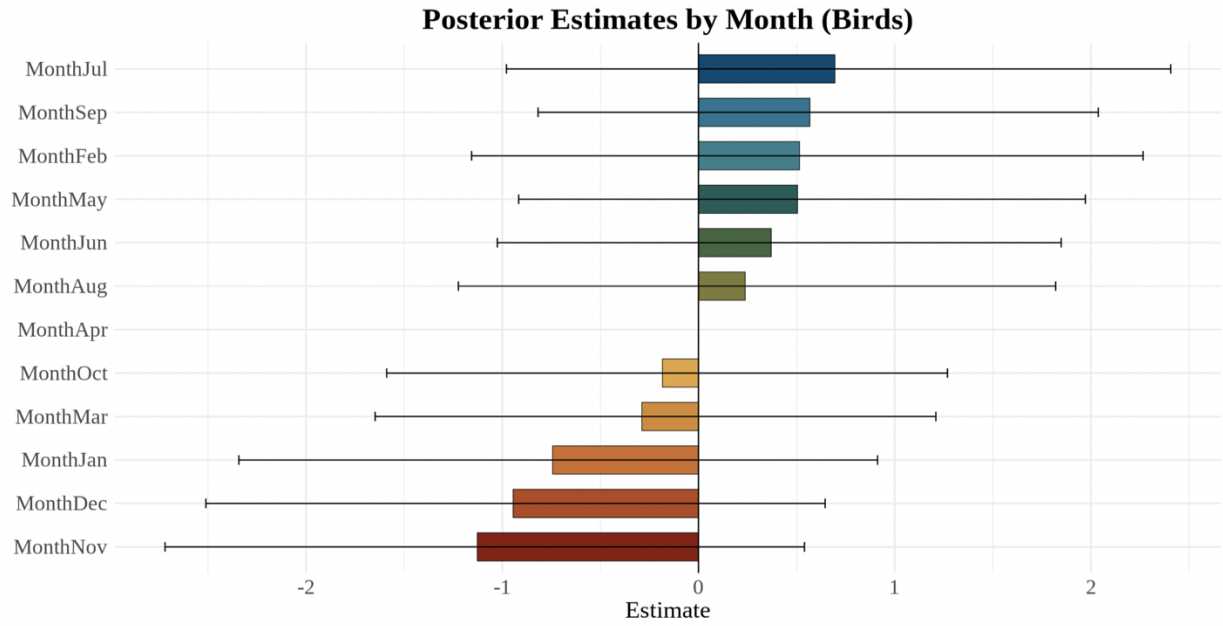


Figure 4.8, Posterior estimates by month for birds. The coloured portion of each bar represents the point estimate. The point estimate is the best guess based on the data. If the coloured bar lies entirely above zero, the effect is positive. If it lies entirely below zero, the effect is negative. The thin black line represents the credible interval. If the thin black line crosses zero, the effect is uncertain. All the months cross zero. That doesn't necessarily mean there's no effect just that, based on the data, it is more uncertain.

4.6 First Survey Results

4.6.1 Location of Survey Respondents for First Survey

The most interest came from residents in South Lethbridge, the second most North Lethbridge, and the third most from West Lethbridge (figure 4.8). Only 2% (22) of the respondents came from outside the city.

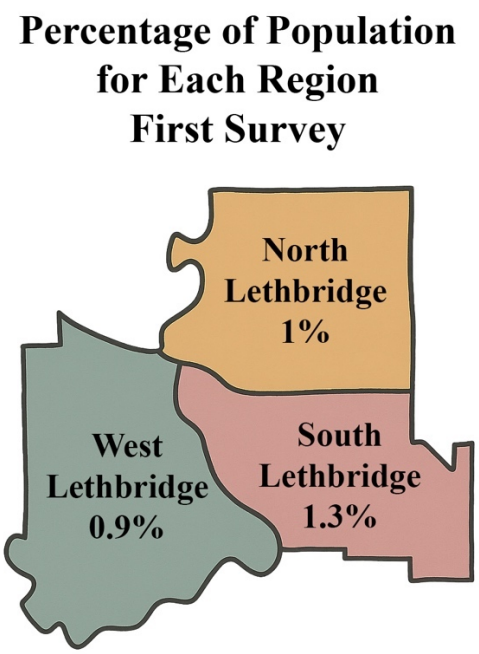


Figure 4.9. Percentage of population in each region that responded to the first survey. Overwhelmingly, most respondents (92% or 1056) believed animals visited their property.

4.6.2 Age Range of Respondents for First Survey

I asked the following question, “To which age-range category do you belong?” at the end of the first survey, emulating the order of the interview questions (figure 4.9). 26 (or 2%), did not specify their age.

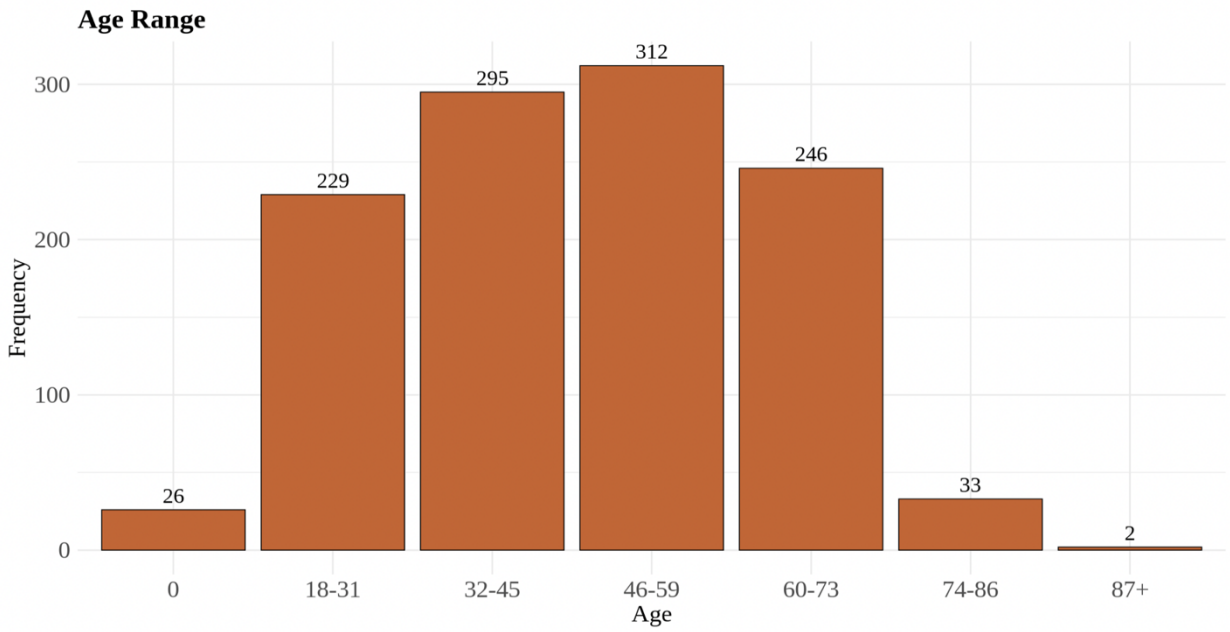


Figure 4.10, Age range of respondents to first survey.

Out of curiosity, I plotted how the ages were distributed across the regions (figure 4.10). I was curious if there might be variation but the distribution was uniform with the Westside having a slightly higher number of 18–31-year-olds. This is likely the result of many of the university's students residing on the Westside.

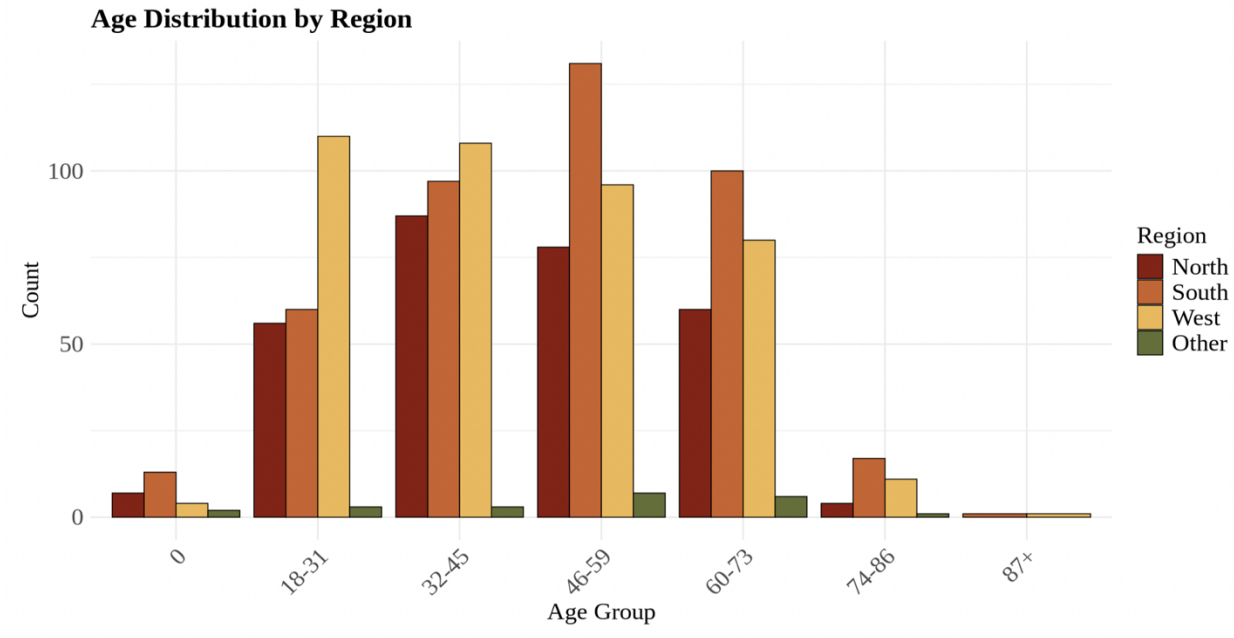


Figure 4.11, Ages per region. 0 represents outside of the city. One can see the weight of 18-31-year-olds is most prevalent in the west where more university students are likely to reside.

4.6.3 Range of Species Visiting Yards in First Survey

The following figure shows the types of animals people believed visited their yards (figure 4.11). Clearly birds would have been present in most, if not all, yards. I suspect specifying birds as a class rather than by species led to lower reporting. This failure on my part was corrected in the second survey.

The percentages reflect how many respondents, out of a total number of people who took the survey, believed a particular animal visited. For example, if 722 out of a possible 1143 respondents reported deer visited their yard, then that would be 63%. Of course, there could be multiple species reported for each yard, thus it was possible to have 63% indicate deer as well as 61% indicate skunks, etc..

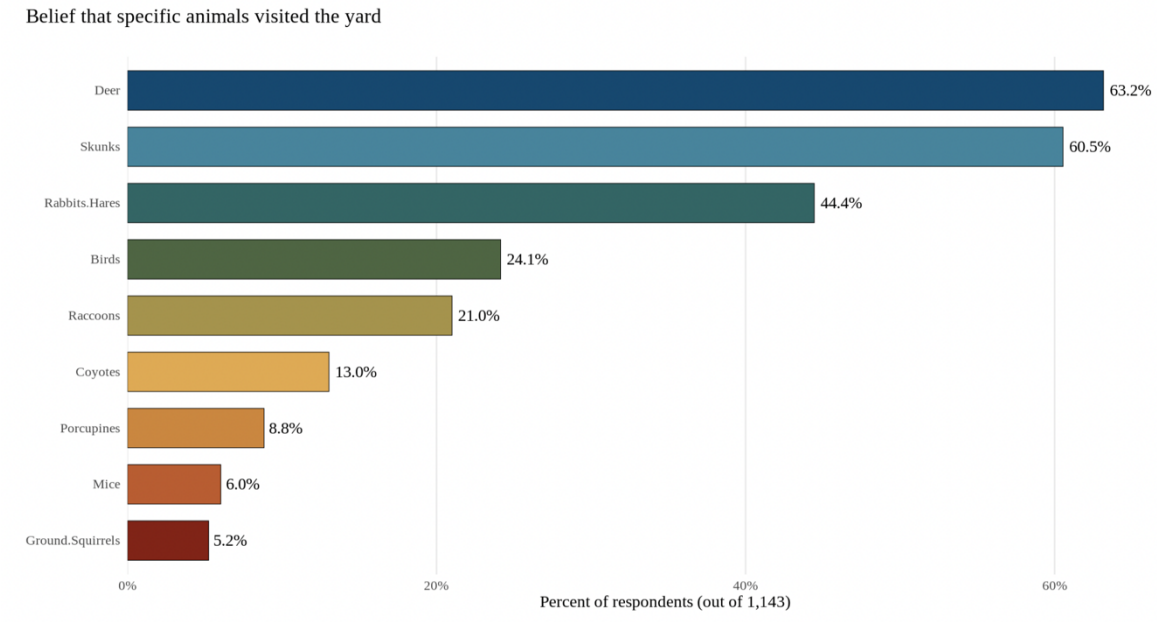


Figure 4.12, Animals believed to have visited as reported by first survey respondents. Here we see deer, skunks, and rabbits and hares were the most reported, whereas ground squirrels, mice, and porcupines were the least reported.

Most people (83% or 945) reported animals visited based on sightings. Scat/droppings was a distant second at 22% (or 255 of respondents). As above, possible signs were not mutually exclusive allowing for both 83% to report sightings as well as 22% report scat/droppings, etc. (table 4.3).

Table 4.3, Possible signs of animals reported by first survey respondents.

Possible Signs	
Sightings	83% (n = 945)
Scat/Droppings	22% (n = 255)
Prints/Tracks	14% (n = 158)
Smell (Skunk Specific)	13% (n = 147)
Damage to Plants/Garden	5% (n = 53)
Sounds	4% (n = 45)
Dog Sprayed (Skunk Specific)	4% (n = 41)
Other Possible Signs	9% (n = 105)

4.6.4 Attitudes to Animals Visiting Yards in First Survey

Attitudes to animals were largely positive with only 11% (or 120) being purely negative. In terms of distribution of attitudes per animal, as shown (table 4.4), when skunks, raccoons, and mice were present, negative comments were highest. These numbers were calculated based on animals reported and attitudes assigned from comments. They will not add up to 100% as not all respondents commented and not all comments were able to be assigned a value.

Table 4.4, Distribution of attitudes by animal as reported by respondents. Given that deer, skunks, and rabbits and hares were the most reported, in this table we see they also have the most positive, mixed, neutral, and negative attitudes assigned to them.

Animal	***Positive***	***Mixed***	***Neutral***	***Negative***

 *deer*	29% (n = 336)	17% (n = 200)	10% (n = 116)	5% (n = 59)
 *skunks*	23% (n = 262)	19% (n = 215)	9% (n = 104)	9% (n = 100)
 *rabbits.hares*	21% (n = 243)	12% (n = 142)	7% (n = 79)	3% (n = 34)
 *birds*	13% (n = 144)	7% (n = 78)	3% (n = 31)	1% (n = 16)
 *raccoons*	7% (n = 79)	6% (n = 68)	4% (n = 45)	4% (n = 43)
 *coyotes*	6% (n = 68)	4% (n = 44)	2% (n = 23)	1% (n = 12)
 *porcupines*	4% (n = 46)	2% (n = 27)	1% (n = 12)	1% (n = 15)
 *mice*	2% (n = 22)	2% (n = 28)	1% (n = 8)	1% (n = 11)
other animals	5% (n = 61)	4% (n = 51)	1% (n = 16)	1% (n = 11)

I asked two open-ended questions, “Can you elaborate on why you feel one way or the other?” and “Is there anything else you’d like to tell us about the animals that visit your property and/or how you feel about wild animals being present within city limits?,” that were used, in part, to gauge safety concerns regarding animals withing city limits. 197 (17%) respondents

reported concern for themselves, children, and pets whereas 119 (10%) expressed concern for wildlife within city limits.

4.6.5 Attractants to Yards for First Survey

I assessed the attractants (location, fruit trees, berry bushes, bird feeders, compost, garbage, grass, woodpile, water source, garden, food source, shelter and other attractants) that participants reported to be present for each species. Fruit trees appear to positively influence the reported presence of birds, as do berry bushes. Bird feeders may positively influence the presence of birds and mice. Woodpiles seem to positively influence the presence of birds and skunks. Gardens, flowers, and plants appear to positively influence the presence of birds and, to a lesser extent, deer and rabbits/hares. Food sources may positively influence the presence of raccoons and skunks. Shelters and decks appear to positively influence the presence of skunks. And other possible attractants seem to influence the presence of birds. Surprisingly, water sources appear to have no positive relationship to the reporting of any of the animals (figure 4.12).

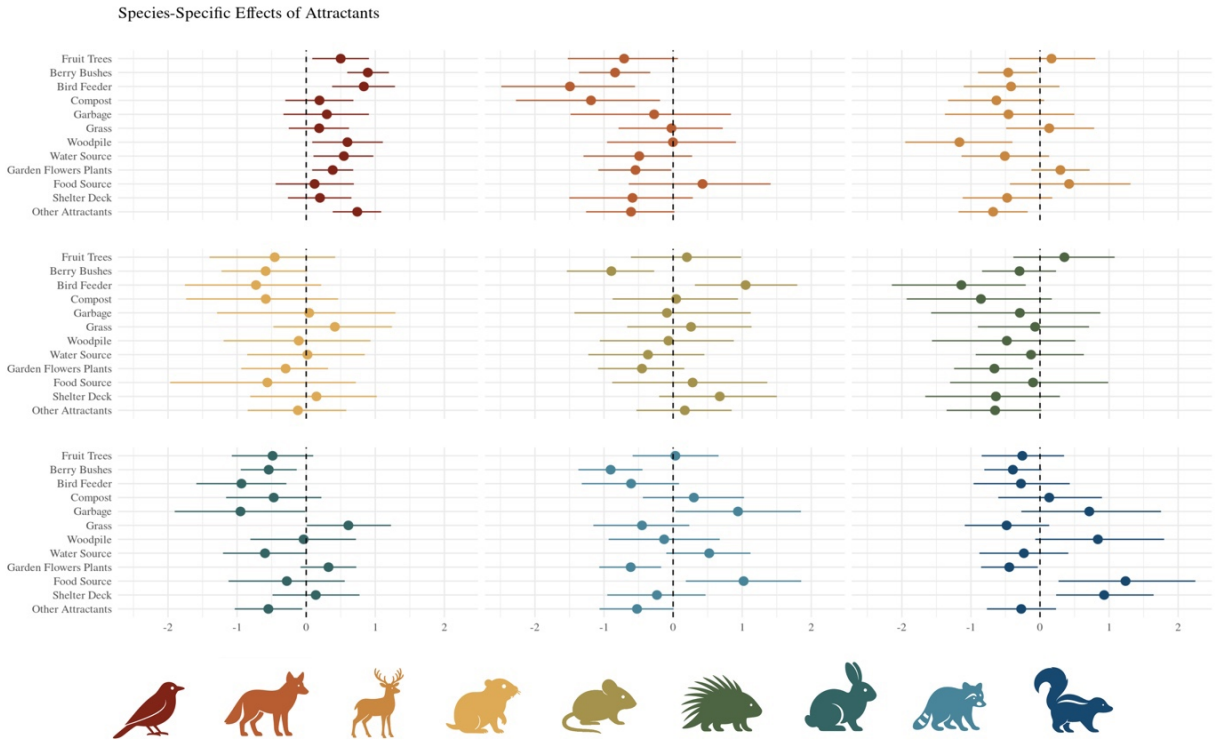


Figure 4.13, Possible animal attractants may include location, garden with flowers or plants, berry bushes, shelter/deck, other signs, fruit trees, and bird feeders. On this plot the round dots indicate the posterior mean of the effect of each attractant on that species. The horizontal bars indicate the 95% CIs. If the entire coloured line is to the right of 0, that attractant's effect is more certain. If the entire coloured line is to the left of 0, that attractant's effect is less certain. If it crosses zero, the effect is uncertain. The coloured animals direct the reader to the relevant subgraphs.

4.7. Second Survey Results

4.7.1 Location of Second Survey Respondents

Interest was equally distributed between the 3 regions of the city in the second survey (figure 4.13). 18% (50) of the respondents came from outside the city which was a considerably higher number than in the first survey.

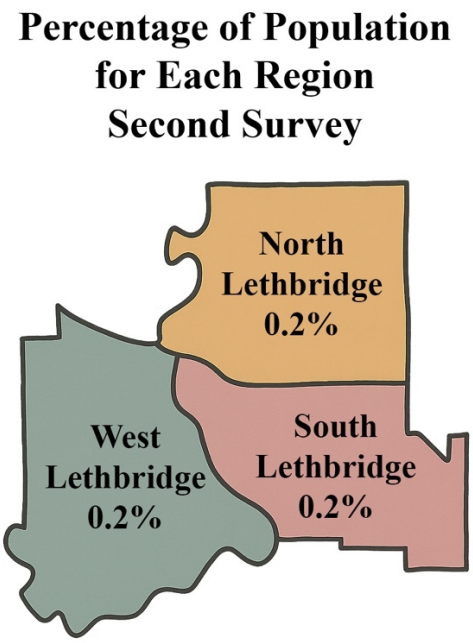


Figure 4.14, Percentage of population in each region that responded to the second survey.

4.7.2 Age of Respondents for Second Survey

The age of respondents was divided into 8 categories with the majority (63% or 176) ranging from the categories representing ages 45 – 74 (figure 4.14).

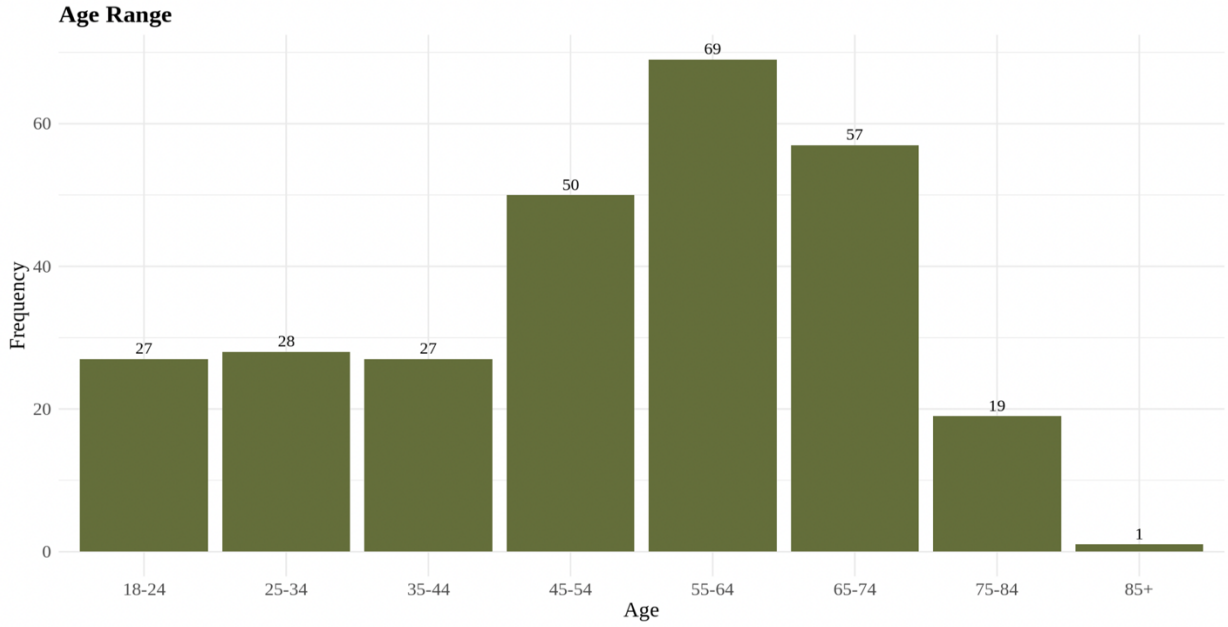


Figure 4.15, Age range of respondents to second survey.

4.7.3 Further Demographics for Second Survey

Out of the 278 respondents,, 177 (or 64%) identified as she/her, 85 (or 31%) as he/him, 11 (or 4%) as they/them, and 5 (or 2%) as "other." A total of 220 (79%) lived in houses as opposed to apartments (7% or 20), duplexes (6% or 16), townhouses (5% or 13), or "other" (3% or 8)). Most (31% or 86) were raised in a large town/small city (10,000 – 99,999), with the second most (24% or 66) hailing from a city (100,000+), and the third most (22% or 60) from a small town (1,000 – 9,999). The majority (26% or 71) possessed a bachelor's degree or had some university education (26% or 69). (See table 4.5.)

Table 4.5, Second survey respondent demographics outlining gender, the type of residence where the respondent lived, the size of community in which they were raised, and their education level.

Gender	***Number of Respondents***
She/Her	64% (n = 177)
He/Him	31% (n = 85)
They/Them	4% (n = 11)
Other	2% (n = 5))
Type of Residence	
House	79% (n = 220)
Apartment	7% (n = 20)
Duplex	6% (n = 16)
Townhouse	5% (n = 13)
Other	3% (n = 8)

Size of Community Were Raised	
1,000-9,999	22% (60)
10,000-99,999	31% (86)
100,000+	24% (66)
Suburb	1% (3)
Farm	15% (41)
Semi-Rural	4% (12)
Education	
Some High School	4% (11)
High School	11% (30)
Some Trade or Vocational	5% (13)
Trade or Vocational	12% (33)
Some University	25% (69)
Associate	5% (14)
Bachelor	26% (71)
Master	9% (25)
PhD	7 (3%)

4.7.4 Range of Species Visiting Yards in Second Survey

When asked if wildlife visits their property, 98% (or 273) answered yes. The following two figures (4.15 and 4.16) show the numbers of mammal/reptile and bird visitors reported:

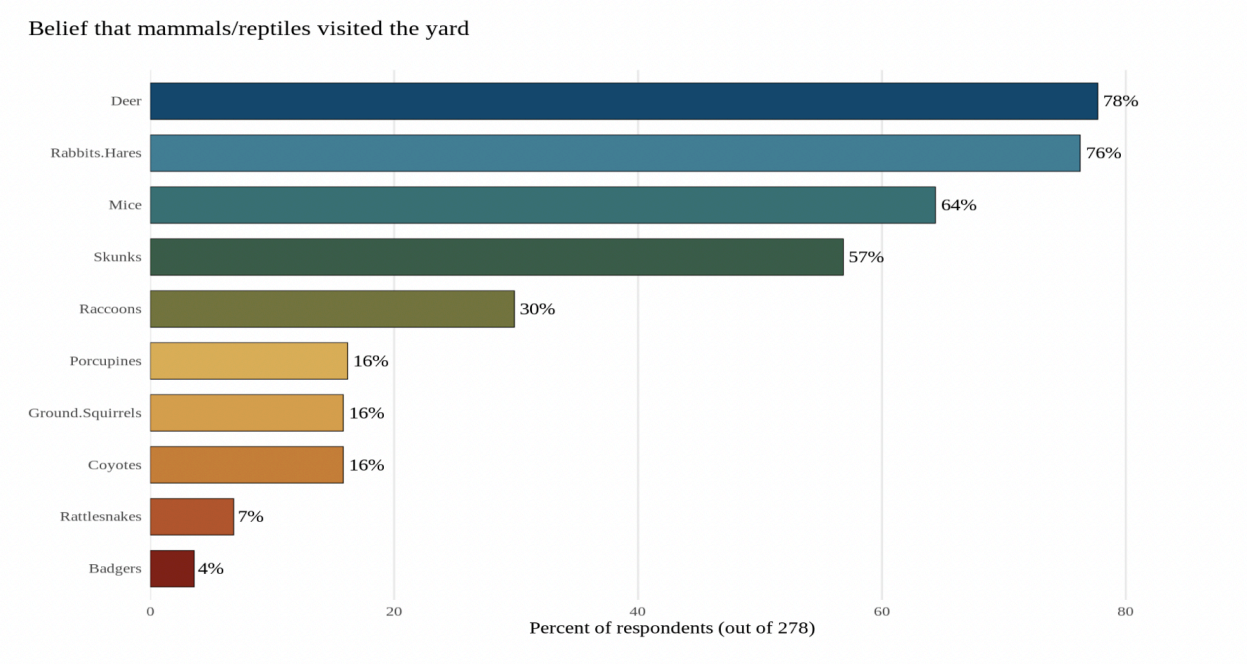


Figure 4.16, Count of mammal/reptile visitors reported by respondents. For example, deer, rabbits and hares, and mice were the most reported, whereas badgers, rattlesnakes, and coyotes were the least reported.

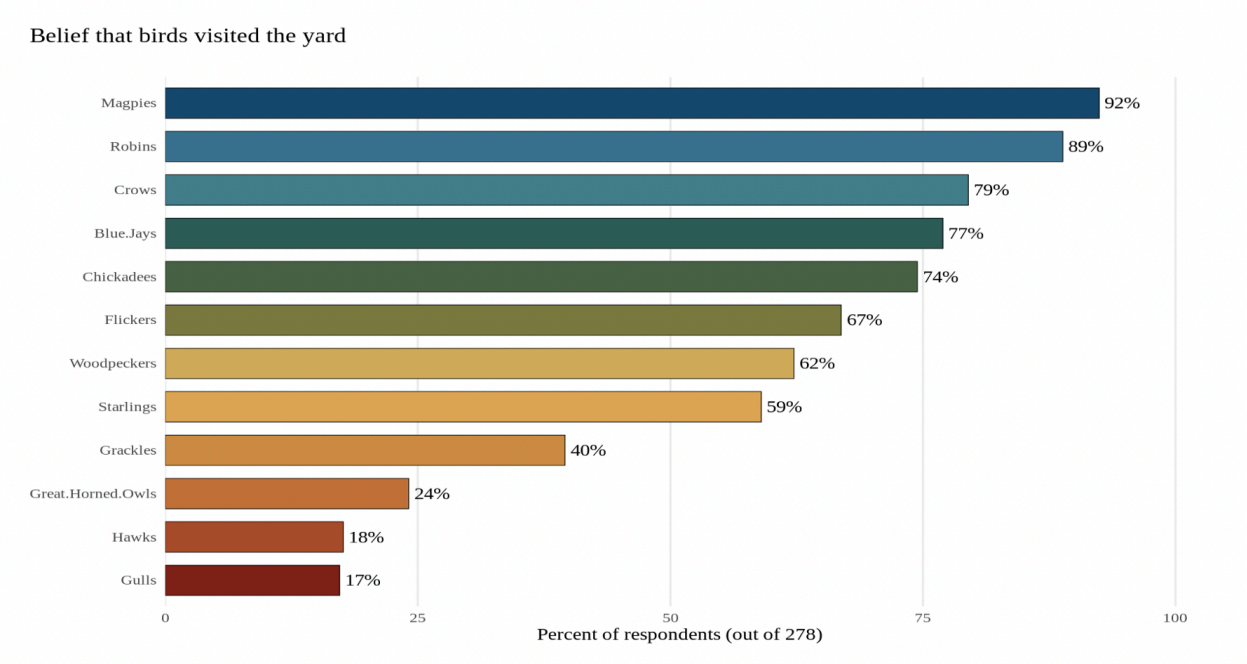


Figure 4.17, Count of bird visitors reported by respondents. For example, magpies, robins and crows were the most reported, whereas gulls, hawks, and great horned owls were the least reported.

In addition, 11% (or 31) of respondents reported rattlesnakes and 7% (or 19) reported amphibians or other reptiles.

4.7.5 Attitudes to Animals Visiting Yards for Second Survey

I then asked respondents to rate each animal on a Likert scale. Although the top 7 animals appeared in the same order as in the first survey, I included the following table 4.6 because it is more nuanced and because of the addition of badgers, Richardson's ground squirrels, and rattlesnakes. In this case percentages were calculated for each animal based on the number of respondents who reported how they felt about the animal listed. Because I used a Likert scale, I did not have to assign attitudes to open-ended comments.

Table 4.6, Number of responses each type of mammal (deer, skunks, rabbits/hares, raccoons, coyotes, porcupines, badgers, mice, ground squirrels/gophers, and rattlesnakes) received in each attitude category.

Mammal and Rattlesnake	Enjoy Very Much	Enjoy	Mildly Enjoy	Neutral	Mildly Dislike	Dislike	Intensely Dislike
 *deer*	42% (n = 118)	35% (n = 98)	13% (n = 36)	4% (n = 12)	2% (n = 5)	1% (n = 4)	1% (n = 4)
 *skunks*	15% (n = 41)	17% (n = 46)	15% (n = 41)	17% (n = 46)	12% (n = 32)	11% (n = 30)	13% (n = 37)
 *rabbits.hares*	39% (n = 109)	32% (n = 88)	15% (n = 42)	10% (n = 29)	2% (n = 5)	0.3% (n = 1)	0.3% (n = 1)
 *raccoons*	16% (n = 44)	18% (n = 49)	17% (n = 47)	21% (n = 59)	10% (n = 29)	9% (n = 26)	6% (n = 16)
 *coyotes*	14% (n = 39)	15% (n = 43)	10% (n = 29)	19% (n = 52)	8% (n = 27)	16% (n = 45)	13% (n = 35)

 *porcupines*	28% (n = 79)	18% (n = 49)	13% (n = 35)	17% (n = 47)	7% (n = 19)	9% (n = 24)	6% (n = 18)
 *badgers*	18% (n = 51)	10% (n = 28)	10% (n = 28)	25% (n = 69)	8% (n = 21)	14% (n = 38)	12% (n = 34)
 *mice*	5% (n = 15)	7% (n = 20)	8% (n = 23)	17% (n = 48)	17% (n = 46)	20% (n = 55)	23% (n = 63)
 *ground squirrels*	15% (n = 42)	19% (n = 53)	19% (n = 54)	25% (n = 70)	8% (n = 23)	8% (n = 22)	3% (n = 8)
 *rattlesnakes*	15% (n = 41)	12% (n = 34)	10% (n = 29)	16% (n = 45)	9% (n = 26)	13% (n = 36)	21% (n = 57)

Instead of a generic bird category as in the first survey, I specified species, shown below (table 4.7):

Table 4.7, Number of responses each type of bird (magpie, crow, gull, other birds) received for each attitude category.

Bird	Enjoy Very Much	Enjoy	Mildly Enjoy	Neutral	Mildly Dislike	Dislike	Intensely Dislike
 *magpies*	20% (n = 55)	16% (n = 45)	16% (n = 45)	18% (n = 49)	13% (n = 37)	7% (n = 19)	8% (n = 23)
 *crows*	19% (n = 54)	17% (n = 46)	19% (n = 53)	18% (n = 50)	13% (n = 35)	6% (n = 18)	6% (n = 16)
 *gulls*	11% (n = 31)	12% (n = 34)	22% (n = 60)	33% (n = 92)	8% (n = 22)	9% (n = 24)	4% (n = 10)

 *other birds*	68% (n = 188)	22% (n = 62)	5% (n = 15)	4% (n = 10)	0	0	0

4.7.6 Additional Questions Covered by Second Survey

I undertook the second survey with assumptions about the relationships between dogs and skunks and cats and birds. These were largely borne out. 45% (or 125) of respondents had dogs and 28% (or 78) indicated that their dog interacted with wildlife. Of those, 10% (or 28) reported that the interaction was negative. I then asked, if applicable, to please describe the dog's interaction(s) (appendix E). The range of species dog owners reported having interactions with their pets was somewhat surprising. When it came to cats, 36% (or 99) of respondents had cats and 15% (42) responded that, yes, their cat interacted with wildlife. Of those, 4% (or 11) reported that the interaction was negative and 15% (or 41) people admitted to their cat killing birds. As above, I asked, if applicable to please describe the interaction(s) (appendix F). Not surprisingly, people confirmed their cat(s) killed birds.

The next questions dealt specifically with skunks. 8% (or 22) of respondents reported being sprayed by a skunk when asked. In hindsight I would specify a difference between the respondent being sprayed and their dog being sprayed as I find it unlikely 8% of respondents were sprayed themselves. 32% (or 88) said they were afraid of being sprayed by a skunk. Again, if I ran the survey again I would differentiate between respondents and their dogs.

In an effort to better understand the safety of wildlife within city limits I asked whether or not respondents had ever hit, injured, or killed wildlife with their vehicle. 16% (or 45) of respondents responded "yes." I then asked respondents to specify what type of animal (see table 4.8). Again, respondents could have hit or killed more than one type of animal or no animals

whatsoever. Thus, the numbers in the table will not add up to 100%. For example, 6% of 278 respondents may have hit or killed a deer which means 94% did not hit or kill a deer.

Table 4.8, Number of respondents who have hit, injured, or killed deer, ground squirrels/gophers, skunks, porcupines, other mammals, magpies, and other birds with their vehicles (within city limits).

Animal	***Yes***
 *deer*	6% (n = 17)
 *ground squirrels*	4% (n = 10)
 *skunks*	1% (n = 3)
 *other mammals*	0.4% (n = 1)
	4% (n = 10)
 *magpies*	1% (n = 3)
other birds	3% (n = 9)

56% (or 155) of respondents admitted to intentionally feeding or watering wildlife within city limits And 65% (or 180) reported having a bird feeder. When asked “Should people intentionally feed or water wildlife, excluding birds, within city limits?” 44 (or 16% (or 44) answered “yes.” 87% (or 243) supported intentionally feeding birds within city limits.

4.7.7 Attractants to Yards for Second Survey

In order to better understand the role of potential attractants, I asked more detailed questions, specifying possible lures. Respondents were asked about whether their garbage was secure to prevent wildlife from feeding on it and whether or not they had the following on their property: compost, fruit trees, other trees, grass, woodpile, water source, vegetable garden, flower garden, garage, shed, and deck. I differentiated between garage, shed, and deck in case there were any differences between detached structures and a deck in terms of possible denning sites. I modeled what attractants (such as compost, fruit trees, other trees, woodpile, water, vegetable garden, flower garden, garage, shed, and deck) are reported when there are also mammals reported (Y/N). Compost, fruit trees, other trees, grass, woodpile, water, vegetable garden, flower garden, garage, shed, and deck all had little or no effect (figure 4.17).

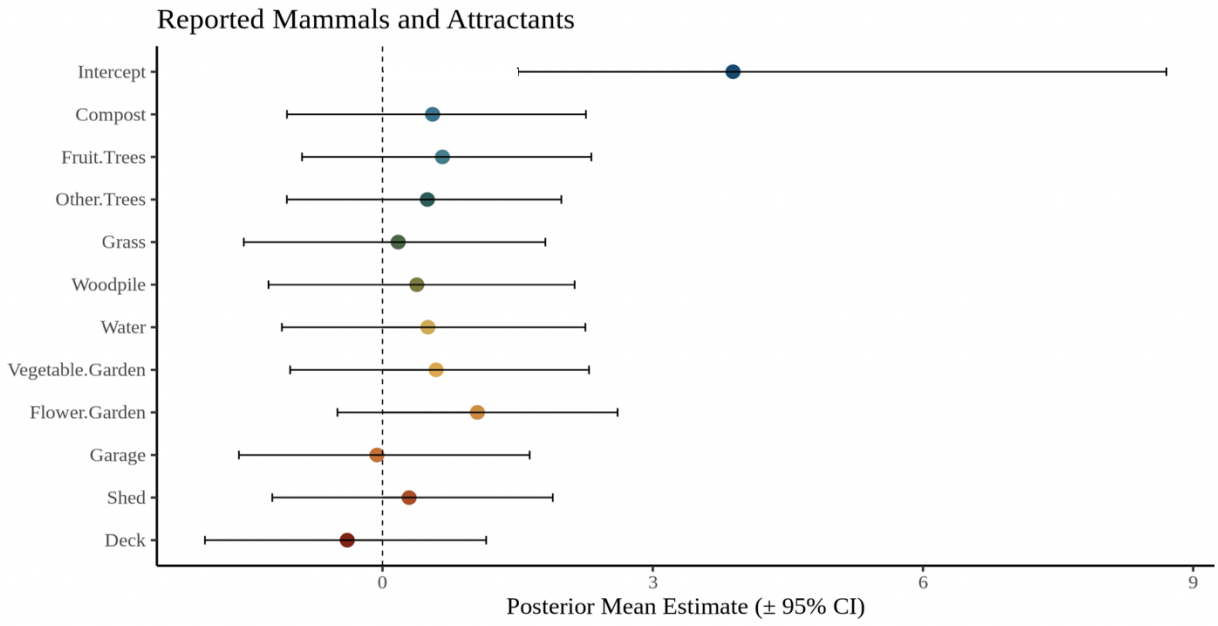


Figure 4.18, Posterior estimates for predictors of mammals reported. On this plot the round dots indicate the posterior mean of the effect of each attractant on that species. The horizontal bars indicate the 95% CIs. If the entire thin black line is to the right of 0, that attractant's effect is more certain. If the entire thin black line is to the left of 0, that attractant's effect is less certain. If it crosses zero, the effect is uncertain.

I also assessed what attractants are reported when there are birds (Y/N). No attractants had any meaningful effect (figure 4.18).

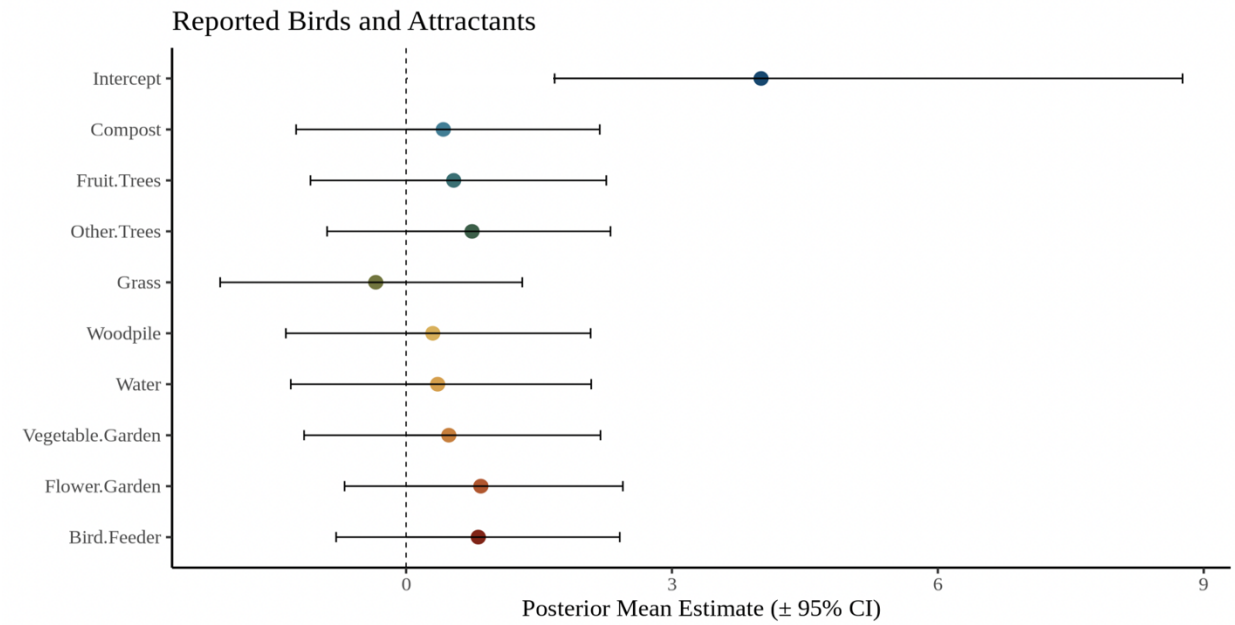


Figure 4.19, Posterior estimates for predictors of birds reported. On this plot the round dots indicate the posterior mean of the effect of each attractant on that species. The horizontal bars indicate the 95% CIs. If the entire thin black line is to the right of 0, that attractant's effect is more certain. If the entire thin black line is to the left of 0, that attractant's effect is less certain. If it crosses zero, the effect is uncertain.

4.7.8 Respondents Relationships to Wild Animals

I was curious to know who was answering the survey questions and their relationship to wild animals. Were respondents detached from nature or were there people who hunted or bird watched connected? After all, bird watchers and hunters were more inclined than those not engaged in outdoor recreation to improve habitat for wildlife, support conservation groups financially, and speak out on behalf of wildlife (Cooper, et al. 2015). However, I suspected hunters and trappers might be more inclined to trap to euthanize animals based on their "hands on" approach to wildlife. I was not surprised that 35% (7 out of 19) of hunter/trappers trap

wildlife on their property to euthanized whereas only 8% (20 out of 229) of non-hunter/trappers did so. When it came to bird watchers, 9% (20 out of 219) euthanized whereas 12% (7 out of 57) of non-bird watchers did. Having grown up around hunters, I suspected an interest in animals and conservation did not translate to a propensity for coexistence with city limits. This assumption bore out.

Unlike the first survey, respondents where directly asked about safety concerns: When asked "Are you concerned about the safety of your pet, family/household members or self when encountering wildlife within city limits?" 25% (or 70) responded "yes." When asked "Are you concerned about the safety of wildlife in human-wildlife interactions?" 73% (or 204) answered "yes." To "How afraid are you that wildlife might carry and transmit diseases such as rabies?" respondents answered as follows (figure 4.19):

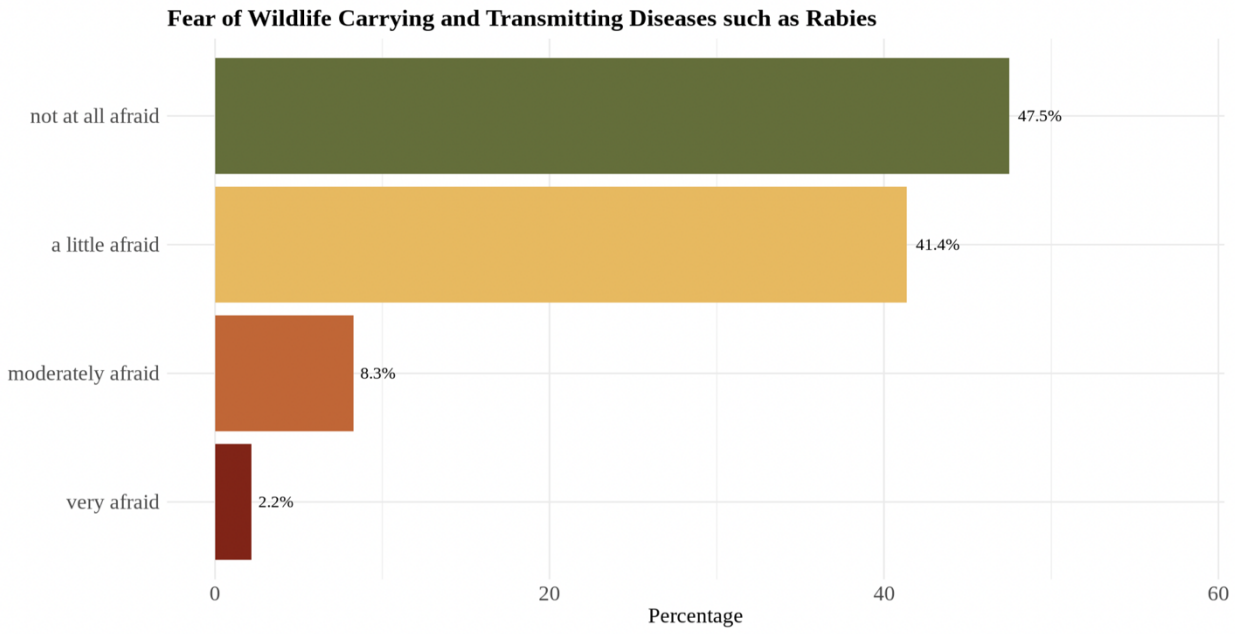


Figure 4.20, Percentages of "How afraid are you that wildlife might carry and transmit diseases such as rabies?"

72% (or 199) of respondents believed wildlife populations within city limits should be managed. Respondents were then asked, "If yes, how so?" Options included culling/euthanasia,

relocating animals, such as rattlesnakes, neutering/spaying/birth control, through the connection of green spaces for movement within city limits, by providing safe animal crossings, and/or by providing veterinary services (for example, if the animal is found injured). 13% (or 37) supported culling, 58% (or 160) supported relocating, and 22% (or 60) supported birth control. 55% (or 153) thought green spaces should be connected and 55% (or 153) thought veterinary services should be provided.

Finally, respondents were asked "Is there anything you would like to add?" Like survey one, these responses were used for the art making aspect of the project and as general inspiration. A selection of responses to this open-ended question are found in appendix G.

4.8 Discussion

This project occurred within the context of previous research on urban wildlife in North American cities. However, a certain generalization pervades the three studies I undertook. Whereas numerous inquiries have looked specifically at birds and their responses to urbanization, not nearly as many have concentrated on mammals specifically (Grade et al., 2022). While I have tried to address a combination of urban wildlife, I have intentionally passed over the opportunity to focus on mammals. That said, in the beginning my motivation was to look solely at mammal diversity and responses to urbanization. This quickly changed due to a burgeoning interest in coexistence and a desire to communicate my research to a broad audience. Thus, I shifted my mammal-centric focus to include birds, reptiles, and amphibians (should they make an appearance). But perhaps most significantly, I prioritized the call for coexistence as the main focus, moving from a more formal, singularly quantitative approach to a mixed-methods, interdisciplinary approach.

Why this shift? One reason it is crucial to understand our relationships with other species within cities is that we live in an increasingly urbanized world. While cities occupy less than 3% of Earth's surface (Campbell, 2019, p. 409), for the first time in human history, they account for more than half the global population. Whereas only 9% of us lived in urban environments in 1900, this figure was 50% by 2000 and is expected to reach 66% by 2050 (McIntyre, 2000; United Nations, 2018). Lest we think Canada is any different, 82% of Canadians reside in urban centers (Trading Economics, 2025). The importance of all these numbers is to bring home the reality that "the majority of people will experience 'nature' and related ecosystem services primarily within the urban fabric" (Kowarik, 2011, p. 1174).

This is not to say that *Backyard Wilderness* doesn't fit within the urban ecology literature. Instead, it contributes by including mammals as well as birds and by addressing wildlife within the residential, urban landscape. Most studies look at the urban-rural gradient or focus on green spaces rather than looking at yards specifically (Grade et al., 2022). In a review of literature on citizen science and "extinction of experience," Schuttler et al. (2018) identify that many urban wildlife study participants are interested in nature prior to their involvement in the research. My project sampled the general public through social media, press, and television news stories, choosing homeowners and renters who may not have had a pre-existing interest in the topic. As well, people were able to participate without a substantial investment of time or resources. They merely had to be willing and able to be interviewed and host a camera (installed by me or an assistant) or participate in an online survey. Thus, although in many ways the project is less conventional, it does expand the focus of previous studies by including mammals, looking at residential yards specifically, and including a more general public.

So, what did the trail cameras and two surveys reveal about urban wildlife, camera hosts, and survey respondents within Lethbridge? While the quantitative data may not be able to answer the larger philosophical question as to whether or not people see themselves as a part of nature, they do tell us about specifics regarding these areas. For example, we know raccoons were well embedded in South Lethbridge, whereas coyotes had a greater likelihood of appearing in West Lethbridge.

In terms of the trail camera data, there were no surprises: a greater range of species appeared in yards where the cameras were placed for longer periods. Generally speaking, the shorter the placement, the fewer species were recorded. There were also no surprises regarding the time of day when species appeared, with mammals most frequently appearing at dusk, night, and dawn and birds more detectable at dawn chorus and during daylight hours. I cannot comment on whether crepuscular and diurnal animals tended to be more nocturnal to avoid human interactions beyond the observation that, based on my data, it appears not. Other studies have shown that "more adaptable species may persist in areas of higher visitation [by humans] by altering their timing of activity to minimize conflicts with people" (Procko et al., 2023). Nor did I look at the "weekend effect," in which the behavior of wildlife may differ between active weekend periods and relatively quieter weekday periods. However, this effect is not simply identified given that nocturnal and diurnal wildlife may have varying patterns of activity relative to human activity (Nix et al., 2018).

When it came to the first survey, I was pleased that as many as 1,143 people participated which translated into 1% of the population of each region of the city. The age range of respondents (27% or 312 were 46-59) reflected the age range of Facebook users where the survey was posted. While Facebook is popular with all ages, usage increases with age. "Those

aged 50 to 64 (83%) are the biggest users, followed closely by 35 to 49 (81%)" (Summerfield, 2024).

The range of species purportedly appearing in yards aligned closely with those captured by the trail cameras, with deer and skunks most frequently reported. The fact that skunks were reported so often (61%) was unexpected as I found camera hosts often didn't know they had skunks.

The most common sign of wildlife that respondents reported was sightings. However, many (22%) identified that they were able to tell animals visited based on scat/droppings. It is worth noting that in the first survey, people who reported skunks had a positive comment rating of 23%, higher than mixed (19%), neutral (9%), and negative (9%). I was curious to know whether or not this would play out similarly in the more robust second survey. It did not.

When it came to attractants, one lure in particular stood out. Contrary to expectations, in the second survey water source did not appear to have an effect at all. Initially I assumed water would be the greatest attractant; however in the first survey it was trumped by food source for both skunks and raccoons. Side note, one camera host that had both skunks and raccoons routinely put out cat food. In the future, I would specifically ask about people leaving out pet food for their pets which could lure other animals.

I had a much smaller uptake for the second survey with only 278 respondents. This turned out to be a meager 0.2% of residents per region. I believe two factors led to this decrease from the first survey: survey exhaustion and the length of the second survey being 50 questions rather than 10. Again the bulk of respondents reflected Facebook demographics. 64% identified as she/her and most (26%) possessed a bachelor's degree or some university education (25%).

Whereas the top three animals reported in the first survey were deer, skunks, and rabbits/hares, the top three in the second survey were deer, rabbits/hares, and mice. Skunks moved from second to fourth place. Because I included birds as species rather than as a class I was able to get a clearer picture of what birds were reported, with magpies, robins, and crows being the most reported.

I was also able to refine my approach to attitudes. I included 7 categories on a Likert scale rather than 5 in an attempt to get a more nuanced understanding of people's feelings. The most popular mammals were deer, rabbits/hares, and porcupines. The least popular were mice, rattlesnakes, and skunks.

In an unforeseen outcome, both dog and cat owners reported their pets had interactions with multiple species, not just skunks (for dogs) and birds and mice (for cats). As stated earlier, I wish I had more clearly differentiated between people and their dogs when it came to skunk sprayings. This lack of clarity should be resolved in future queries.

Given the staggering number of deer killed by vehicles on Alberta's highways, it was anticipated that the percentage of respondents reporting having hit or killed deer with their vehicles within city limits would be quite high. It turned out to be 6%. Data suggests over 4,250 deer were killed by vehicles in Alberta each year from 2000 to 2023 (Farrell, 2024).

It was to be expected that hunter/trappers were purportedly more (35%) likely to trap and euthanize animals than non-hunter/trappers (8%). This is likely due to their "hands-on" approach to animals and a history of handling dead or dying wildlife.

I was pleasantly surprised that most (48%) of respondents were not afraid that urban wildlife might spread diseases.

Finally, 72% of respondents believed wildlife should be managed within city limits with the majority supporting relocation (58%), the connection of green spaces (55%), and veterinary services (55%). While one might think that 45% of respondents supporting veterinary services may be quite high, in "Urban wildlife ecology and conservation: a brief history," Adams (2005) predicted that "…we are likely to see an increased adoration and preservation of nature as values of the urban public, and broadening demand for husbandry and veterinary-like services for individual animals in local populations" rises (Adams, p. 150).

In sum, there were no very surprising or unusual discoveries. This said, the quantitative data gave a well-rounded overview of what animals were appearing, where they were showing up, and at what times of the day and year. The surveys also demonstrated that, although the reporting could not be confirmed or verified for accuracy, the information conveyed predominately lined up with expectations.

These three studies, the trail camera placements and the 2 surveys, provide a strong foundation for the qualitative data and for the art making aspects of the overall project. For example, the trail camera data was directly used to produce a series of linocut portraits based on what animals were appearing. And attitudes towards the animals, both showing up in yards or reported by survey respondents, directly fed my belief in the necessity for coexistence.

CHAPTER 5

UNDERSTANDING ATTITUDES TO URBAN WILDLIFE: A QUALITATIVE APPROACH

In an episode of "The Hedgehog & the Fox," Tim Ingold discusses how "Anthropology's subject is humanity unsliced" (Miller, G. 2019). For Ingold, anthropology transforms one's approach to life. It's a conversation in which we ask "How should we live? How can we be better people?" I extend this approach to my project to ask the same questions. Here I offer a collection of narrative fragments that can come together to suggest methods of achieving new ways of being in the world. It's not a tidy theoretical framework, but rather a proposal. If we embrace being part of nature, if we stop being merely stewards or proprietors, defining nature as pristine and untouched by humans, or busily pillaging natural resources for profit, can we find a new way forward? What does it mean, after all to be part of something, to be invested in it for our own well-being and the well-being of others?

There are key concepts that I gather to make this proposal. The first set comes from Anna Lowenhaupt Tsing's *Mushroom at the End of the World* (2015): 1) the assemblage, or bringing together often disparate bits and pieces to create new opportunities for being; 2) curiosity, or noticing the possibilities for collaboration with other species; and 3) cross species co-ordinations that involve livable collaborations that work across difference (Tsing, 2015, p. 28). The next comes from Ursula K. Le Guin's *Carrier Bag Theory of Fiction* (1988/2019): the gatherer's carrier bag as a way of constructing alternate stories apart from the dominant action-motivated narratives of the conquering hero. These are distinct and sometimes incongruent concepts that we seldom, if ever, think of deploying together as a way of approaching change. To those familiar with the work of Tsing and Le Guin, it may even seem that these ideas have had their moment

and we have subsequently moved on, distracted by the death throes of democracies. But it is precisely because previously deployed structures and methods are crumbling around us that we need to focus on the fine details of the everyday. Here I offer a collection of stories that advocate for coexistence with urban wildlife, not as a feel-good project but as a strategy for mutual survival.

As explored in “The Nature-Culture Divide: Making Change at the Unruly Edges”, my primary interest was whether people see themselves as part of nature or as agents that act on a nature separate from themselves. This theme is reflected in the responses to the open-ended questions in the first survey where respondents repeatedly wrote that the animals they encounter in the city were here first and that the land is their territory. This not only erases indigenous peoples, who have been present on the land for (at the very least) 10,000 years, but denotes an assumption that, while other animals are of nature, humans are not.

A sampling of comments from the first survey reflects sentiments on wild animals being here first and the implied historical separation of man from the wilderness landscape:

> We have encroached on their territory, now they are trying to find ways to get by.
>
> They were here before I was, so who am I to tell them they can't be in my backyard? The deer in particular make Lethbridge unique.
>
> [I] enjoy nature and know that we are the ones encroaching on their land.
>
> Nature is awesome. We are just borrowing their space.
>
> I believe that they were here first, we are encroaching on their land...
>
> We are encroaching on their habitat and they deserve to live just like us.
>
> They were here before us. They'll be here long after we're gone. Animals are important even if they are pretty stinky.

> We've encroached on their habitat; we should make allowances for their presence.
>
> We have encroached on their habitat. We need to learn to live harmoniously with nature.
>
> We live in their habitat and we live to see them in the area.
>
> Animals were here first. We [shouldn't] be trying to get rid of them.

By no means do I intend to suggest wild animals have not been displaced by settlers, subsequent and ongoing population growth, the sizable city that resulted, and the arrival of non-native species like raccoons. My point is that humans migrate, we displace, we build, we impact native species, and we introduce new species. It doesn't mean we exist outside of a nature defined by our absence. Nature defined as everything that isn't human, or human cultivated, exists as a victim of human agency, which is clear in the comments. Instead of seeing humans as embedded or enmeshed in our environments, we're seen as interlopers. As Rachel Carson writes, "But man is a part of nature, and his war against nature is inevitably a war against himself," (Carson, 1962, p. 231) stressing an inter-connectedness in spite of indifference, neglect, exploitation, contamination, and commodification.

Another theme running through the comments is adaptability. This is framed either as the ability of wildlife to adapt to humans and our environments or the human ability to adapt to wildlife being present in the urban sphere. Below is a selection of comments focussing on non-human animals and their ability to adapt:

> [H]humans have taken away a lot of wild spaces from the wild. It's just the wildlife adapting, not their fault.
>
> I admire their ability to adapt to the changes humans have brought. Many species can't adapt, which is sad.

> Cities are a large part of the 'natural' landscape now. Of course they will try to adapt.
>
> They have to live and adapt to us taking over the land.
>
> The deer have been here for much longer than houses. They're just trying to adapt to living in a different environment.
>
> Animals can always adapt thank goodness.
>
> They have every right to live within the city. Most of the aforementioned are very adaptable and find ways to survive and thrive. What's not to respect about that?

Adapt is being used as a synonym for change. Although they could be partially talking about adaptive evolutionary responses to urbanization such as a smaller body size or longer limbs.[7] From a discursive viewpoint, I believe what is being suggested aren't innate differences but rather conscious choices, suggesting wild animals have an awareness that allows them to take advantage of certain changes in their environment. This is apparent in the comments phrased as animals "trying to adapt." However, we're not talking about choices here, like picking items off a menu. Animals perceive what their umwelt offers them: a detached garage affords a potential denning sight because it is away from the main house, there's a previous hole dug there, it has brush/tree cover, part of the building is out of the sight-line of humans, etc.. "Certain relations between animal and environment properties afford, or make available, certain actions. In other words, opportunities for behavior – affordances – *emerge from* such relations" (Stoffregen & Wagman, 2025, p.1). So what we're talking about is the relationships between sets of factors that come together in a specific situation to afford certain behaviours.

[7] There is a suggestion that rapid rates of evolution are associated with humans, such as Alberta Big Horn Sheep having progressively smaller horns in response to hunting regulations (Zimmer, 2024). Rapid evolutionary changes have rarely been measured relative to urbanization, which would be ideal for studying such changes due to their comparable synanthropic and commensal populations in similar city landscapes. For example, Donihue and Lambert give the example that cities of differing ages could help provide insight into the rate at which species can adapt (Donihue and Lambert, 2015, p. 200).

I'm not necessarily opposed to people assigning some form of human-like sentience to urban wildlife. It is a form of anthropomorphism which may very well benefit urban wildlife populations. Although, as Tsing points out, animals as protagonists are often framed as being "for children and primitives" p. 155. As Manfredo et al. propose, modernization has led to increased anthropomorphic thinking which, in turn, has elevated the need for connections, approval, and meaningful relationships. This has led to a shift from more traditional views of human-wildlife relations to seeing wildlife as "fellow beings in a common social community" (Manfredo et al, 2020). Where once they were "dumb animals" over which we wielded dominion, wild animals have now become fellow travellers, sharing not only our spaces, but our feelings. There is a shift in thinking that must occur for wildlife to move from being pests and targets to being subjects of affection and caring. It's a move from "They're not particularly cute or graceful animals. They're really just savages and diminish the [property values]" to "Animals are part of the ecosystem, just as I am. I feel that coexisting harmoniously is necessary and important" (quotes from the first survey).

Coupled with humour, anthropomorphism seems to function as a way of mitigating annoyance and, instead, recognizing a need to take responsibility and modify our own behaviours:

> The deer use the crosswalks in the Canyon, the Rattle Snakes are difficult, Coyotes get insanely close but you only need to be mindful for a day or two before they move on. Raccoons & Skunks love it when ppl litter Timmy's on the road, the skunk can't jump the concrete barrier even though he thinks he can & the Raccoon hasn't figured out yet that veering off the road is better than running down the road. Woodpecker needs a tree to drill instead of our roof at 6am. [Garter] Snakes eat the wasps off one of our shrubs, the Finches dive bomb me if I get too close to the one pine, had a magpie fall in [love] with his reflection in our window & "narccisis" (sp?) Would chatter all day at the window, but on the whole the animals are better behaved and respectful on the West side then downtown. I used to live in London Road near the coulee. The huge

> Porcupine jay-walked all the time, raccoons played on the roof & mocked the dog, Skunks were as bad as the cats & liked to spray the dog, the Coyotes were like a gang, & the magpies ganged up to taunt the dog. We took their space, as a higher thinking evolved species it's our responsibility to coexist with the animals found in our area (first survey).

After all, in an era where a powerful American oligarch makes statements like "The fundamental weakness of Western civilization is empathy" (McCammon, 2025) there is a need to foster feelings of unity and promote positive mutual associations.

That said, there are also potential downsides to assigning human-like consciousness and agency to wild animals. In his blog, *Landscapes & Letters*, hunter and conservationist Paul McCarney writes of "Three Concerns With Anthropomorphism." The first is people who advocate for anthropomorphism as a way to create connections with wildlife fail to demonstrate that empathy for particular species leads to habitat protection. Second, feelings of compassion and empathy do not automatically lead to changes in human behaviour. And third, it is relatively easy to get the public to identify with certain charismatic species without anthropomorphizing them (McCarney, 2018). But are there even more concrete reasons to think twice about anthropomorphism? Focussing on individual animals, especially charismatic species, draws attention away from the actual issues putting species at risk. Assigning special, desirable traits such as cuteness, playfulness, or parenting skills to an individual may leave animals without those traits deemed undesirable or unworthy. And finally, anthropomorphism "tends to distance audiences from the realities of the natural world" (Sommerville et al, 2021). By assigning human emotions and motivations to animals, we fail to educate ourselves about actual animal behaviour. We do things like feed wildlife, not because it's good for the animal, but because it makes us feel good. We take the easy route rather than the more inconvenient course of action such as slowing

down at dawn and dusk, especially in areas known as deer crossings, or paying for over- and underpasses for wildlife.

Yet, I'm still not willing to dismiss the potential for anthropomorphism to build relationships with the natural world. I think of Beatrix Potter and her stories and drawings of Peter Rabbit. Potter, an amateur natural scientist, who did extensive botanical studies, manages to combine an anthropomorphized bunny family with exacting observations of animal anatomy and behaviour. It isn't an either/or situation (either anthropomorphism *or* animal studies). It's *both*. Peter is a naughty child bunny, but he is also a cottontail that raids gardens for food and evades an angry human gardener. I have spent hours with Potter's illustrations, enjoying this overlapping of fanciful fiction with the truth of survival, having painted copies of the artworks on my then 2-year-old niece's walls. Coupled with exploring Potter's world, we would take long walks through a local park, observing ducks and feeding chickadees. My niece quickly became as enamoured with my field guide to birds as with Potter's drawings reproduced on her walls. I am sharing this tale because I believe Manfredo et al are onto something: for the small child, and myself, anthropomorphism participated in our experiencing animals as part of a shared nature-scape. This in no way diminished our mutual attention to actual animals or our interest in their appearances and behaviours but, instead, augmented our affections and encouraged our curiosity.

This all ties in with the third theme that emerged from the open-ended comment sections, coexistence and sharing space:

> I wish there were more people who wanted to coexist with these creatures. I wish there was more I could do personally (my landlord won't let me put up bat house. Sigh.) There's no reason to hate/kill the backyard inhabitants... Maybe relocate the skunks... But I'm a big believer in respecting nature. They were here first. In light of the recent rattlesnake and turtle incidents in Lethbridge... They are completely innocent animals that don't understand what humans are or why they do what they do. It's not fair in many ways for us to harm/kill/destroy the homes of any

animal that is threatening or inconvenient or "gross" because all they are doing is acting according to their nature. We are the ones who can use these big brains of ours to adapt.

It's a joy to see wild animals and, as long as they pose no danger to people, [they] should be allowed to coexist.

I love being in a city where I can see some wild animals still. We try to coexist with them. The hardest one is the Rattle Snake. Not keen on them and we have too many shrubs and yard decor they can hide in so I avoid these areas of my yard during snake season.

We are going to get a Wildlife camera to see what lurks at night. We need to coexist so we need to figure out how to do this safely.

It was their home first, we need to coexist but set limits e.g. close up spaces under homes/porches where they could get in, strong lids on [garbage].

I believe there can be a harmonious coexistence if we show respect and protect their habitat as much as possible.

I enjoy watching them and knowing that they can coexist with us

We need to learn how to coexist.

We all gotta share the space so share is what I do. Plus gives me something to photograph.

We need to share the environment. We are the superior species. Keep Eco system in balance.

I feel it's important to share your space with other critters and provide habitat for wildlife.

I like the idea. We moved from the country so this reminds of us home. We put 'cages' over plants and I have LOTS of tiger lilies to share with bunnies.

I'm from an island on the west coast. Animals are part of life. We share the land with them.

We share the earth with animals we should celebrate that, we have an amazing river valley in this city.

> I grew up in the Crowsnest Pass so seeing wild animals was a regular occurrence. I think that living in the city there starts to be a disconnect from nature and it's nice to have the occasional reminder that we share our space with other creatures.
>
> I think we need to learn to live with animals. The attitudes that wild animals are pests and should be eradicated is an outdated view. It is proven that animals and humans can coexist in even urban environments.

Here I return to Tsing and her belief that "Humans shape multispecies worlds when our living arrangements make room for other species" (Tsing, 2015, p. 22). Humans have long seen ourselves as proprietary overseers of nature. However, as tales of never-ending tariffs, plummeting stock prices, and mass lay-offs begin to fall away, other ways of looking become possible. One of those ways is using the concept of the assemblage. In art-making, the assemblage is a collection of often disparate found objects brought together to make a whole. I think of Marcel Duchamp's *Bicycle Wheel* (1913), Robert Rauschenberg's *Monogram* (1955-59), and Martha Rosler's *Meta-Monumental Garage Sale* (2012). For Tsing, assemblages are "open-ended gatherings. They allow us to ask about communal effects without assuming them, they show us potential histories in the making" (Tsing, 2015, p. 23). Unlike the artworks mentioned above, they are without borders. However, in the same sense as the artworks, Tsing's assemblages don't just gather bits and pieces, they make new worlds. They are so much more than the sum of their parts and introduce new ways of being.

Figure 5.1, *Bicycle wheel* by Marcel Duchamp, 1913, this version 1964. Galleria nazionale d'arte moderna, Rome, Italy. Wikimedia Commons, public domain: CC0 1.0.

Figure 5.2, Robert Rauschenberg, *Monogram* (1955–59). Oil, paper, fabric, printed reproductions, metal, wood, rubber shoe-heel, and tennis ball on two conjoined canvases with oil on taxidermized Angora goat with brass plaque and rubber tire on wood platform mounted on four casters, 106.7 x 135.2 x 163.8 cm, Moderna Museet, Stockholm. Purchase with contribution from Moderna Museets Vänner/The Friends of Moderna Museet © Robert Rauschenberg Foundation, New York. Creative Commons licensing, CC BY-NC 4.0.

Figure 5.3, Installation view of the exhibition, "Meta-Monumental Garage Sale" November 17, 2012–November 30, 2012. ART588431. Photograph by Thomas Griesel. Digital Image © The Museum of Modern Art/Licensed by SCALA / Art Resource, NY. Permission to reproduce obtained.

This is how I imagine coexistence within the urban sphere. As we find ourselves experiencing increasingly rapid climate change, political radicalization, threats to our sovereignty, and crumbling democracies. "[T]here might not be a collective happy ending" for us (Tsing, 2015, 21). While the world literally burns, I argue, through Tsing, that it's time to turn toward metaphoric mushroom picking. Instead of abandoning all hope, let us shift our attention "*to other sites of promise and ruin*" (Tsing 2015, p. 18) and adopt a methodology of collaborative survival through assemblages. But what does that look like? Like an artist foraging for broken remains, loose ends, and interesting scraps with which to build a new whole, let us put our found objects into to our carrier bags and take them with us as perhaps hitherto unimagined

building materials. These found objects can be observations, interactions, and literal garbage, the remains of ruination. When I read the comments from those advocating for coexistence and sharing, I think that is what they're doing. They're observing other ways of being in the world, collecting stories, and folding those into their own ways of surviving to form collective ways of being.

A fourth theme running through the comments was that of pests or nuisances, specifically skunks:

> Deer clean up the crab apples and are pretty. Skunks are a threat to our pets.
>
> The deer are becoming too [acclimated] to people, which will make them dangerous to vehicles and pedestrians. Skunks are always an issue—good scavengers, but potentially a smelly threat.
>
> Had a skunk visit once, was not a good thing. Don't mind other creatures.
>
> I have a dog. Don't want him sprayed by skunks or hurt by porcupine[s].
>
> I am not thrilled with the skunk(s), mixed feelings about the deer.
>
> The deer have proven to be a problem in other cities but not the case yet in Lethbridge IMO [in my opinion]. [S]kunks? Well, I am not interested in meeting up with one.
>
> Was happier with rabbit under the shed. Attempting to get skunk out.
>
> I was excited they were there--except the skunk and raccoon. They would be pests so they had to leave. Moth balls worked well for that!
>
> I like some of them (birds), can tolerate others as long as they don't eat my vegetables (rabbits), [and] think of some as pests (skunks).
>
> The skunk sprayed my dog who then came in the house.
>
> Not a fan of skunks or raccoons. But the trees and flowers in my yard along with the pond serve as an important area for birds, insects and thirsty cats for sure. :)
>
> Skunks stink and aren't friendly. Woodpecker ruined my siding.

> The skunks smell bad, spray our dogs and are difficult to get rid of, city of Lethbridge does not assist in removing skunks.
>
> Skunks and raccoons can destroy buildings and be quite viscous. Deer seem harmless.
>
> Skunk gets into garbage and recycling. We also have dogs we don't want sprayed. Really enjoy bird watching.
>
> Skunk spray makes it difficult to sleep at night and the fear of getting sprayed every morning.
>
> Skunks are adorable but their smell is horrific.
>
> Skunks have babies and sprayed my dog. Deer poop everywhere and the magpies crap all over everything.
>
> Skunks are disease vector[s] and stink; other wildlife haven't caused problems so are welcome for the time being. Crows and magpies are overpopulated and cause damage to roof and any equipment outside. pest [because] they create a bit of work. cleaning up deer poop, skunks [scratching] holes in the lawn, soft damage to trees from porcupines eating bark.
>
> Our dog gets quilled and skunked lots.
>
> Skunks have a place in nature, but not really in the city.
>
> The skunks. I totally dislike the skunks. I keep everything boarded up pretty good so they have now where to go here. I enjoy the wild life being in the city. It could be worse.... we could be back when the Buffalo roamed here.

There is a sense that somehow skunks are solely responsible for their defensive behaviour. I'm not trying to shift responsibility for negative dog-skunk interactions from one animal to another. This isn't a blame game where dogs could miraculously stop, consider the skunk's warning signs, and back away slowly. I'm saying that blaming skunks for defending themselves fails to take into account the realities of dog and skunk behaviour. After all, skunks do give warning signs that they are about to spray: they stamp their feet, turn around and point their backends

towards the target, raise their tails, and look over their shoulders and hiss (Wildlife Centre of Virginia, 2025).[8] Dogs simply get too excited to notice or respond to these signs.

I do believe humans have a role to play in terms of mitigating sprayings. There are a range of choices being made. For example, letting one's dog off-leash is a choice that could result in one's dog being sprayed. So, you're left with a decision, do I let my dog enjoy some free-run, unhindered romping and risk a spraying, or do I keep them tethered to me by a leash and play it safe? Clearly, there's no ideal answer. You're left hedging your bets. What's the likelihood there will be a spraying? Will it be an inconvenience I can deal with if it occurs? What I'm getting at is that there are contexts in which sprayings become more likely, and humans have the ability to act in accordance with these risks.

Many survey respondents were skunk friendly or, at the very least, skunk neutral. This takes us back to the theme of adapting, but where it is humans making the choices:

> We adapted to the skunk family and made efforts to minimize disrupting them. Nobody was sprayed.
>
> Skunk lives under our shed. Lots of birds friendly social bluejays. Rabbits and deer often pass by.
>
> We think people should chill out about skunks. They are adorable, and don't bother us a bit. And it is incredible to see deer playing in our back garden in winter.
>
> It was my own fault the skunk sprayed my dog, [I] have since closed up the medium size access points to the property. The magpies pick out the onion bulbs I plant every year. but this specific group was on the property before us...It's kind of comes with the territory of where we live. Mostly interesting, an adventure, sometimes I grumble when cleaning up the mess.
>
> I see them. They go in my garage as I feed strays so skunks and raccoons on my deck too.

[8] It takes a skunk 2-10 days to replenish their supply of noxious, sulfur-containing chemical spray, so their preferred approach is to avoid spraying all together (Miller, 2015, Fact Animal, 2025).

> I like having skunks, rabbits, raccoons, and deer in the urban areas.
>
> I have heard of people trapping skunks, (even cats which are dumped elsewhere) and killing them, this is very concerning to me. As for the deer I just worry about them being hit by a vehicle.
>
> Skunks are great grub eaters. Deer fertilize and birds are hilarious.
>
> Have several sheltered bird feeders. The skunks like to winter under front steps, no one bothers them. The front yard is plants, not grass.

What leads some people to tolerate and even like skunks while others detest and fear the small malodorous creatures? As well as anthropomorphism and humour, actual contact can play an important role. Here I look at 2 of the in-person interviews done when placing the trail cameras in hosts' backyards as well as conversation I had with a camera host outside the interview process. The first interview we look at omits—at the request of the interviewee—a detailed retelling of euthanizing a skunk.

5.1 Interview with Sylvia (pseudonym).

> Sylvia:
> Okay, so I'm being recorded, but I will confess we, we went on a campaign, in 2016…in the fall. And we trapped a skunk…and we euthanized it. We found out how to do that.
>
> Leila:
> Yeah.
>
> Sylvia:
> But I'll tell you, it is a big problem…disposing of the skunk. I mean, trying to find a place, I was gonna say, trying to find a place in the country to dispose of it without…
>
> Sylvia:
> …Like [it's] not as easy as you might [think].
>
> Leila:
> Undercover skunk disposal.
>
> Sylvia:

We had to… and in the barrel and then, and the trap that we used to trap it and euthanize it, we had to take it to our friend's acreage, because it… at some point the skunk released…And it was unbelievable…My husband had to wear rubber gloves, if you touched anything…The smell was just…

Leila:
Yeah.

Sylvia:
So that was a tense experience.

Leila:
Yes.

Sylvia:
And I decided that I was not going to be the skunk patrol of the neighborhood…I mean, the neighbors were all, you know, [were] happy that it was gone. And…But I thought, you know, these things are causing absolutely no problem.

Leila:
Yeah.

Sylvia:
I don't have a dog.

Leila:
Yeah.

Sylvia:
And if you do, *you* look after it…And so I've just made peace with them. I'm not…

Leila:
Yeah.

Sylvia:
They cause no trouble whatsoever…If people are just afraid of them…

Leila:
Yeah.

Sylvia:
So we ended up installing motion sensor lights for my husband's the garage. When he leaves in in the dark, he'll work out there, right? So

there's one there. There's one right at the corner of the house. And then, I think, and then the back, the back door has a light, but we just installed motion sensor light. So…We walk around at the night. Well, the lights come on.

Leila:
So excellent, yeah, and it has it had. Do you think the motion lights are like, are working?

Sylvia:
I'd have no idea. Because that was okay. That was 2016 I'm sure that there was [a skunk] there last year…But we just kind of have left it, you know.

Sylvia:
We're not really, we haven't seen that. We didn't see the skunk last year.

Later in the interview.

Sylvia:
So, speaking of cats… I have cats that wander through here, and I am actually more angry about them…Like the animals, I'm quite content to let be… But stray cats really bugged me.

Leila:
Yeah.

Sylvia:
Speaking of skunk, so last year my neighbour…There definitely was a skunk. She's got a little dog, so she's up in arms about…She put a trap at the side of her house and caught a skunk and I and she wasn't home, and I was just sick because I thought, what? And the sun came out, and that poor little [skunk]…

Leila:
Yeah.

Sylvia:
Oh my goodness, in there. Anyway, uh, shortly before noon, or maybe it was just afternoon, the pest people come by. She actually informed the pest people…and they had no problem with that. I mean, I think the little skunk was wanting to be rescued…

Leila:
Yes.

Sylvia:
but they just laid a blanket over that trap…and he picked it up. I think he picked up with a pole just in case, he wouldn't have had to…And he put it in his, the back of his truck, or whatever he was using, and off they went. Out. They went, and he just released it, somewhere. That's what he said he was going to [do].

Leila:
Yes, yes.

Sylvia:
But, but that's another thing. If people are going to trap those animals, they need to, they need to be around so that those things aren't suffering in the sun. Because it finally just kind of laid down like this. It was just so sad. I thought that is not fair.

Leila:
Yeah.

Sylvia:
So, so there *was* a skunk last summer. You just reminded me of that, but she caught it.

Later.

Sylvia:
I was going to say, I feel like I'm a lone voice in the wilderness, especially on this skunk. Many people just want it gone. But I'm a little bit like that about the deer.

In the interview Sylvia recounts disposing of a skunk after euthanizing it. She clearly felt the need to get rid of a skunk when it moved into her area. The skunk became a topic of neighbourhood discussion and Sylvia and her husband acted. After experiencing what killing the animal entailed, she rethought her whole relationship to skunks and rejected pressure from her neighbours to take action in the future: “And I decided that I was not going to be the skunk patrol of the neighborhood.” She then goes on to describe a skunk trapped by a neighbour as “that poor little [skunk]” and empathizes with the trapped animal being left out in the hot sun. What is of particular interest, however, is that this change in sentiment did not extend in the same way to

the deer visiting her property. It seems a skunk specific experience leads to a skunk specific pardoning of animal behaviour.

The second interview involves a host living alongside 22 skunks denning on their property.

5.2 Interview with Henry (pseudonym).

Leila:
So the first [question] I ask is, what makes you suspect that there might be animals visiting your property?

Henry: Track signs…Dropping signs…Disturbed earth.

Leila:
Wow.

Henry:
Yeah, visual sightings…

Leila:
Excellent.

Henry:
And I think that's that sort of covers it, but tracks, like I actually make a point of going out after it snowed to see who's been in the yard visiting, because it's kind of cool, like we have a little forested area almost, yeah, and there's a lot going on in there…I've heard things on the roof. I mean, yeah, I've seen things here. I've seen things in the gravel lot. I've seen them on the driveway. I've seen them in the wooded area. So, you know, there's a lot of areas…Where they can sort of hide, or, if it skunks where they can feed, because they get, like, grubs and stuff like that. So, yeah, it's, I don't know…it's a, it's a perk of living here. I find, like, yeah, it makes it kind of interesting. Yeah.

Leila:
I mean, you are perfectly located, yeah, so close to the coulees. It's really…

Henry:
I mean, I don't know how, sometimes, how these animals get across that road. I know that worries me a little.

Leila:

…So, then, the other thing, is there anything about your property that you think attracts [them] like a compost or anything like that, that? Or do you think it's just location? I mean…

Henry:
There are fruit trees and fruiting bushes. Yeah, there are choke cherries, buffalo berries, plums, apples. There are acorns. There are…There's a maple tree. There's lots of seeds.

The compost, I think would be a lower end thing, because we just have one composter. And I mean, that might attract raccoons, possibly. But there's really not a lot of edible material in there? Yeah, I would say it's partly, like the seclusion also, like, there's obviously proximity to the coulees, the sort of openness of the property. It's not, it's that part's not really fenced in.

Leila:
Yeah.

Henry:
So there's access from multiple points So, but, oh, the one thing that did attract raccoons was the bird feeders. Oh, yes, they got on the roof, yeah, and they tore down the bird feeder…I didn't know they were interested in sunflower seeds or whatever. Yeah, most of it was like, Finch seed or whatever, right? But they came over the kitchen window, one of them, and knocked the whole thing down, and then I could see evidence of them having…foraged for seeds. So that was a new one. So now we got a little more strategic about how we hang the bird feeders. Yeah, that was a surprise. And then I actually started to wonder if there were raccoons living on the roof.

Leila:
Oh, yeah. Have you heard noises up there that make…

Henry:
I've heard things for sure, and I've also seen some destroyed kind of venting screen…Seems probably raccoons.

Leila:
Yeah.

Henry:
That was…there's not really, like a shelter up there, but maybe it's just a good place to hang out. I don't know. Yeah, could be yeah, I've only seen raccoons once, which is weird because a lot of the other animals I've seen multiple times, yeah, but I've seen evidence of the raccoons. So…

Leila:
What do you see multiple…times? Like, what have you seen?

Henry:
Well, this is interesting. I mean, if you, if you ask that question again, what made you think that there was activity on your property…Two summers ago, we had 22 skunks at one time.

Leila:
Yeah. Oh, my God.

Henry:
I saw them all at once…It was amazing. 22 skunks. There were two adult couple…and 18 kittens.[9]

Leila:
Oh, my God.

Henry:
And so I would go out there. I could go into the little wooded area…They were living just under our concrete pad here. So they come and so, and there's a, there was a shed over there, so I think they were under the shed as well. They would come around that wall there, and then they'd come into our little wooded area to forage for worms or grubs or whatever.

Leila:
Yeah.

Henry:
But the kittens would come by themselves, and they would come around me. They would come around my feet and…

Leila:
Totally like, tame?

Henry:
Totally tame. Like cats…Just like kittens, right.

Leila:
Yeah.

Henry:
And there was a kind of heat wave once, and this was cool, and I knew where they were living at that point. They were under the porch, next

[9] This was likely 4 female skunks and 18 kits, as female skunks are known to den together with their kits in the winter. Male skunks tend to den alone and play no role in raising the young (Pulsifer, 2021).

door, yeah, under the deck, patio, the mother, and I hadn't seen them for a few days, but the mother came out with, like, three of the kittens, right and walked right by me, like, hello, I don't know what I was doing, like, picking cherries or something. And okay, and then I realized I had the sprinkler on in the front, and it was going to the sprinkler, and I was cajoling the kittens to get wet, and they didn't want to, like, there's screaming, like they're…

Leila:
Yeah.

Henry:
But the mother eventually got them to go under the sprinkler and got them soaking wet and so and they all got wet. So I knew that. Then when they came back and they walked right by me again…

Leila:
Yeah?

Henry:
Like, look like drowned rats…They were going to feed water to the to the other ones that were still under the porch. They were getting wet…[to] lick the water off each other, which was pretty neat.[10] …And so instead of taking them all out into the heat…she would take a few at a time, get them to carry water back…It was pretty neat.

Leila:
Yeah.

Henry:
And then, I mean, at first, when I started to see skunks, I hadn't done any research. So I would be like, yeah, oh my god, it's a skunk. What do you do?

Leila:
Yeah?

Henry:
And then they're kind of half blind. So I would go out on the front, here's something here the scuffling in the leaves, and then there'd be a skunk. And then every time they're just walking towards me.

Leila:
Yeah.

[10] This was likely one of the females taking her kits outside to the sprinkler. There is no evidence to support that it was a strategy to take water back to the den for other kits.

Henry:
I don't know what to do, because I just honestly, I assumed that the skunk would come up and spray. That's what they do. I found out that's not true…They pretty much have to be injured pretty seriously, yeah, attacked by a dog…stepped on. Who knows. And so after that, that's about when the neighbor wanted to start thinking about killing these guys. I was not on board with that. I was okay with catch and release, like that would have been fine, but yeah. But also then when I found out it was $100 per catch and release.

Leila:
Oh, is it? Yeah?

Henry:
Knowing that, and then knowing that we had 20 plus skunks. I'm like, No, that's like $2,000 yeah, no, yeah. And then part also, my research told me that they are very nomadic. They only stay in one place for a little while, right, at the most a season.

Leila:
Yeah?

Henry:
And again, like, I haven't seen them since. So they were, they moved from here that season, yeah. So that was it. I mean, there's still viable habitat for them there, obviously. So I'm sure that some of their relatives eventually will come back and check things out.

Leila:
Yeah, yeah.

Henry:
Like, I never really noticed a smell and it…

Leila:
You [don't] have a dog that [it] is gonna spray or…

Henry:
No, And that would be a worry. And actually, here's another really cool thing. When I would take [the cat] out on his harness…and the skunks were out there. They have no interest in each other, right? He didn't care, no, but [the cat] is interested in any other animal…

Leila:
Yeah.

Henry:
Like, if there's a dog or a cat or something, he freaks out, puffs up, and he hisses, and, you know, stuff like that, and he wants to get close…When he saw the skunks, he sort of went "Yup." And then went about his business eating the grass again. And the same with the skunks…We're just like, it's a cat who cares.

Leila:
Yeah.

Henry:
That was weird. That's very odd…It's like they have a kinship or something.

Leila:
Yeah.

Henry:
They just…a mutual like, yeah, you're okay, I'm okay, or…Even possibly, like, an ancestral memory of some trouble in their past…

Leila:
Yeah. Unlike dogs that just get sprayed over and over…

Henry:
Porcupines, skunks. Doesn't matter.

Leila:
Doesn't matter how many times they've been hit either. They just go and do it, like, the same damn thing over again.

Henry:
No. [The cat] had zero interest and zero interest in their smell, because I'm sure that there is one, yeah, there is…That was a surprise.

Leila:
Yeah, yeah.

Henry:
So [the] skunks were big.

Leila:
Yeah?

Henry:

Shortly after skunks, I saw something…a badger...And that was, I was shocked…And it was in the it was in the little wooded area…I sort of surprised it, and it, when it saw me, it ran across the street.

Leila:
Yeah, yeah, no kidding?

Henry:
Like, over the ground. Like, I didn't know what it was at first…But it got in the middle of the street, like, Oh my God, that's a badger.

Leila:
Oh, no kidding.

Henry:
I definitely steered clear of that because I think they're kind of unpredictable. Yeah, you don't want to corner them absolutely. So that was cool. That was the one time I saw badger.

Leila:
Yeah, I've only ever saw one over at the university. But yeah, yeah,

Henry:
Yeah. It was weird. Just because I had no reference for [it].

Leila:
How big was it? Like, how…

Henry:
With the tail? Probably about that long [demonstrates size with hands].

Leila:
Wow.

Henry:
Let's see. Like that, like a big cat, you know.

Leila:
Yeah.

Henry:
Deer. Like, the most deer I've ever seen was, there were about 15. Right here…Right on the street…Also in the neighbor's yard, feeding on, I don't know, like spruce branches or something.

Leila:

Yeah?

Henry:
But that was sort of weird too, because they were all kind of still. When I went out there, I didn't know what was happening at first…I thought there's something different over there. And I realized, oh, there's like, 15 deer there. You know what I mean? Like, you see a moose or something like that, you kind of stop for a second. You go, I don't know what I'm looking at.

Leila:
Yeah?

Henry:
Like, oh, they're a whole bunch of animals…So that was kind of neat.[11]

This excerpt gives a sense of a different, more welcoming approach to having urban wildlife visit. The host describes initially not knowing how to respond to skunks being present but, instead of caving to pressure from a neighbour to euthanize or remove the animals, he goes on to do research into the species. There is a recognition and pride that their property has many attractants for urban wildlife. However, what most separates Henry from others confronted with a resident skunk is a delightful curiosity.

Tsing writes of bringing back curiosity, a radical curiosity. Curiosity in Tsing's sense means noticing the possibilities for collaboration with other species.

> Without meaning to, most of us learn to ignore the multispecies worlds around us. Projects for rebuilding curiosity…are essential work for living with others. It helps, of course, to have adequate funds and time. But that is not the only way to be curious (Tsing, 2015, p.p. 281-2).

Yes, curiosity can be a luxury. But it can also be a strategy for survival in a world fraught with precarity and indeterminacy. If we try to exist as separate unified entities, detached from the world around us, we miss the opportunity to begin a process of conceptual and actual integration.

[11] The interviewee went on to supply a list of birds and mammals they'd seen on, or near, their property. One other camera host, an avid birder, supplied a list covering years of bird sightings in their yard.

Because, of course, we can't really exist as separate beings ignoring or pillaging from our environments, isolated from cohabitants that either fit our narratives or become pests and nuisances. Such thinking is the residue of a mindset trapped in a perpetual quest for progress. Stuck, these tales we tell ourselves are linear stories of either failing or thriving under the terms of late Capitalism and have no room for Henry's joyful sprinkler tale.

> Thinking through self-containment and thus the self-interest of individuals (at whatever scale) made it possible to ignore contamination, that is, transformation through encounter. Maximizing their interests , they use encounters—but remain unchanged by them. Noticing is unnecessary to track these unchanging individuals (Tsing, 2015, p. 28).

Curiosity is noticing. It's noticing the possibilities for collaboration with other species. I'm not talking about collaboration in the sense of a coming together in a conscious way to build something of interest and value to both parties. I'm using collaboration in the same sense as Tsing, as a way of "working across difference" (Tsing, p. 29) to negotiate contaminated landscapes and conditions. What are our landscapes and conditions contaminated by? Despite the obvious stuff of Capitalist ruin—risk, instability, insecurity, and uncertainty—they are partially contaminated by encounters with species both inside and outside the progress paradigm. They are contaminated by raccoons that rip an air vent covering from our roof looking for a place to den, by the deer that devour our tulips, by porcupines that quill our dogs, and by flickers that rat-a-tat-tat on our chimneys.

I placed a trail camera with a host on the Northside of the city. As with previous placements I surveyed the property and discussed the placement with the home owner. After choosing the open space between the host's house and neighbour's, I got down on my hands and knees and screwed the camera onto a fence post. Returning a couple of weeks later I retrieved the

camera and memory card and took them home to look at what I'd "captured." To my delight I discovered images of a pregnant female skunk (Figure 5.4).

Figure 5.4, What appears to be a very pregnant, female striped skunk.

I was so excited and couldn't wait to share the images with the host. Soon after sending the pics to him he responded: "Well I'll be darned, looks like it could be a pregnant mamma to be. I'd better try to trap her and move her to the country somewhere" (email correspondence, April 2017). I knew this kind-hearted man was likely looking out for the skunk, but was dismayed his first response was trapping and relocation. Skunks that are relocated outside their territory do not have a strong likelihood of survival (Edwardson, 2018). I had been hoping the skunk, who previous to my poking around had gone undetected, would get to raise her young in the neighbourhood. No such luck. While now I would advocate for coexistence, at the time I wanted to remain objective and didn't feel I should intervene.

We have been taught to respond to the presence of skunks with fear and disdain or we're baffled about how to react. We are indoctrinated with cultural representations of skunks as powerful purveyors of stench. Perhaps our dog has been skunked in the past. But even if we don't have a dog—have never had a dog sprayed—we are sure we must eliminate this threat. While looking for historical images of skunks in advertisements, I came across a Winchester shotgun shell poster from 1908. When first released it was recalled due to the implicit racism. The company trimmed off the wording "Winchester Loaded Shotgun Shells. Shoot Them and Avoid Trouble." The ad was then re-released in 1936 sans text (North American Auction Co. 2019). The image shows an African American father and son, prodding a skunk out of a log. Their shotgun is placed against the log and out of reach. They are dressed in black and white and their black and white dog is running away from the scene. To say it is offensive is an understatement. It's difficult to imagine it's meant to be interpreted as anything other than a comparison between skunks and African Americans, suggesting both are vermin. I use it here to convey the level of contempt shown towards not only humans, but also certain animals, suggesting their traits are so egregious as to warrant shooting with a shotgun.

So how do we begin to address the formula of progress, the placing of humans as the protagonists centred in all our narratives? Is it possible to have other beings take this pivotal place? Le Guin addresses the dominant, hero driven story structure in which powerful, muscled hunters thrust their long pointy sticks into mammoths in dramatic scenes of man versus nature (Le Guin, 1988/2019). Of course it isn't just man versus nature, it's man versus everything. She compares this to other ways of being and the types of stories those ways can tell: stories of wandering, looking, experiencing, of finding this and that of interest and placing it in our carrier bags to take back to our domiciles for further inspection, perhaps for placement in a medicine

bundle or shrine. By comparison, these stories are boring. There's no action. There's no thrusting. There's no killing. And there's no hero. But what has the dominant, hero-driven narrative given us that's so precious? A world order dominated by power-hungry individuals that can never amass enough wealth and control. Perhaps it is time to unseat these "heroes" and focus elsewhere. Our survival may depend on it.

When confronted with pesky wildlife, we feel the need to take action. To control the situation. But what if we took another approach? What if we aren't heroes in our own mini-narratives of conquest over nature? What if we decide there's no hero in this story at all, or that the hero is a skunk, raccoon, or deer? Tsing asks us, "Can I show landscape as the protagonist of an adventure in which humans are only one kind of participant" (Tsing, p. 155)? I ask, can I show you the backyard or alleyway as the protagonist, with other species as the supporting cast? Just as Le Guin argues for the older woman as gatherer over the thrusting, poking young man as hunter, Tsing advocates for other living beings as protagonists. She argues we need other kinds of stories to support a collaborative survival that requires cross-species co-ordinations (Tsing, p.p. 155-6).

This leads us back to assemblages as methods of studying ways of being, which ties in nicely with Le Guin's carrier bag, for what is in the bag is the materials for an assemblage. When we take Henry's approach of noticing what is different, studying what may be mundane, watching what occurs when micro-worlds come together, and recounting our findings to others, we help create these new ways. We ask ourselves what can synanthropic species tell us about adapting and making worlds as they move through cityscapes finding meals of pet food, making dens under cement pads, and enjoying shade trees under which to lie on a hot Summer day? And, this is crucial, what happens when conditions change? For, as Tsing points out, the assemblage

isn't about simply coming together, it's also about noticing the separate bits and pieces comprising the whole. "If we are interested in livability, impermanence, and emergence, we should be watching the action of landscape assemblages. Assemblages coalesce, change, and dissolve: this *is* the story" (Tsing, p. 158).

> I think we need to learn to live with animals. The attitudes that wild animals are pests and should be eradicated is an outdated view. It is proven that animals and humans can coexist in even urban environments. We need to adopt an attitude of respect and tolerance for wild animals and to ensure that they continue to survive (first survey).

PART II

AN ARTISISTIC RESPONSE TO THE NATURE-CULTURE DIVIDE

CHAPTER 6

BACKYARD WILDERNESS: THE ART

> What an artist is trying to do for people is bring them closer to something, because of course art is about sharing. You wouldn't be an artist unless you wanted to share an experience, a thought. – David Hockney, *David Hockney: Drawing from Life*

As an artist, my conception of my project just had to include a non-academic audience, as well as an academic one. I felt the best way to go about this was through exhibitions and artworks presented in a variety of locations, such as a nature centre, a community arts centre, civic art galleries, public billboards, and other public sites. Thematically, the following exhibitions and artworks find their origins in my interest in the nature/culture divide. While working as one half of the artist duo, 12 Point Buck (2009-11), my collaborator, Chai Duncan, and I frequently discussed the role that nature plays in our lives. At that time, I believed strongly that nature was little more than a cultural construct: we are so emersed in our own representations of nature we can't experience it in any real sense. What is nature if not folk tales, Disney wildlife documentaries, and zoos? Subsequently, my understanding of nature matured. Thinking back to summers spent at my grandparents' cabin in the interior of British Columbia, I relish memories of watching chipmunks, mallards, and bats, of getting covered in tree pitch from scrambling around in the woods, and of immersing myself in cold lake water on a hot summer day. I vividly recall seeing a coyote skulk across a street in an East Vancouver neighbourhood during the 1980s, when coyotes first appeared in the metro area. Today, I enjoy watching a cottontail devour new growth in our back garden, much to my partner's chagrin. Such simple interactions have all led me to understand how important nature is; how it shapes our experiences and interactions. These experiences and interactions help inform who we are and facilitate our understanding of the stakes involved in notions of progress and control.

In 2016, I began a PhD in Evolution and Behaviour in the Barrett-Henzi lab at the University of Lethbridge. Knowing of my fascination with nature in general, and coyotes in particular, one of my supervisors, Louise Barrett, suggested working on urban wildlife. I leapt at the opportunity to feed my interest, to delve into this subject and to develop, not only my theoretical understanding, but also my art practice in response. I am fortunate enough to have a committee that supports my desire to have my art comprise a large part of my studies. This resulted in the ongoing project *Backyard Wilderness*. My concerns now are less about how "real" nature is and more about the realities of increasing urbanization and the resulting novel ecosystems that result.

The artworks presented in this chapter all have the goal of promoting coexistence with urban wildlife. The problem for coexistence is that humans want to dominate the urban environment—an environment designed with our own needs and wants at the forefront. Historically, little consideration has been given to native species and we struggle when wildlife shows up and moves in. These animals cause damage to conventional living spaces and structures. Skunks spray dogs and deer eat lovingly tended gardens. Sometimes these situations can get a little uncomfortable. Anna Lowenhaupt Tsing writes, "In this time of diminished expectations, I look for disturbance-based ecologies in which many species sometimes live together without either harmony or conquest" (Tsing, 2015, p. 5). This points to what I believe is an appropriate goal: perhaps we can't achieve harmony but maybe we can avoid conquest. Coexistence doesn't have to be utopian. It can involve humans learning to live with some discomfort and having to plan around other species. We can reimagine our yards and gardens as more than self-contained units. It's about collaborating with other animals on the goal of survival rather than dominating (or exterminating) them.

I believe the first step to coexistence is curiosity. Hopefully these exhibitions and artworks serve to make viewers curious about their furry and feathered cohabitants. Tsing asks: what if the very things we think of as trivial are at the centre of the systematicity we humans seek? I champion Tsing's concepts and use them to frame my own question: what if urban wildlife is more than trivial? Conceiving of urban wildlife as nothing more than pests and nuisances reduces our interactions with such wildlife to that of removing irritations rather than coming to terms with more complex relationships involving mutual respect. What if cohabitation is a key? A relationship with urban wildlife could provide us with a gateway to understanding our own precarious situation and a means for moving forward in uncertain times. After all, the boat has truly sailed on the supposedly halcyon days of human domination of the landscape and all its inhabitants. As Tsing writes,

> Progress felt great: there was always something better ahead. Progress gave us the "progressive" political causes with which [we] grew up…The problem is that progress stopped making sense. More and more of us looked up one day and realized that the emperor had no clothes. It is in this dilemma that new tools for noticing seem so important. Indeed, life on earth seems at stake (Tsing, 2015, p. 25).

Plowing forward does not cut it. While conservative governments play on feelings of nostalgia for simpler/easier times—ones that, it should be noted, never actually existed for the majority of people—towns and cities are threatened by 40+ degree temperatures, "once in a lifetime" weather events that now occur with alarming frequency, and rampaging wildfires that continue to burn through Canadian winters.

6.1 Backyard Wilderness, Helen Schuler Nature Centre, 2019

The original *Backyard Wilderness* exhibition was comprised of 11 linocut portraits of urban wildlife, 24 digital images from trail cameras (accompanied by quotes from online surveys), 111 clay skunks (built by me and several community members), a map on which gallery visitors

could place a dot where they'd seen specific animals, and a ballot box for voting for one's favourite critter. There was also a skunk colouring page available with "Funky Skunk Facts" on the back. The premiere exhibition took place in the gallery space at the Helen Schuler Nature Centre, located in the Lethbridge Nature Reserve, Indian Battle Road South and was accompanied by a well-attended artist's talk (figure 6.1).

Figure 6.1, *Backyard Wilderness*, installation shot, Helen Schuler Nature Centre, 2019. Photo: Angeline Simon.

The linocuts are meant to convey urban wildlife as more than mere pests and nuisances. I want people pause and reconsider their relationship to these animals; to see them as portrait worthy subjects and to think about coexistence as a strategy for adaptive living rather than advocating for, at the bare minimum, grudging tolerance (figures 6.2 – 6.8).

Figure 6.2, “Skunk,” ink on paper (linocut), 22.5” x 18.75” (framed), 2018. Photo: Angeline Simon.

Figure 6.3, “Coyote I,” ink on paper (linocut), 22.5” x 18.75” (framed), 2018. Photo: Angeline Simon.

Figure 6.4, “Raccoon II,” ink on paper (linocut), 18.75” x 22.5” (framed), 2019. Photo: Angeline Simon.

Figure 6.5, “Hare,” ink on paper (linocut), 22.5” x 18.75” (framed), 2019. Photo: Angeline Simon.

Figure 6.6, “Buck,” ink on paper (linocut), 18.75” x 22.5” (framed), 2019. Photo: Angeline Simon.

Figure 6.7, “Fawn,” ink on paper (linocut), 22.5” x 18.75” (framed), 2019. Photo: Angeline Simon.

Figure 6.8, “Cottontail,” ink on paper (linocut), 18” x 18” (framed), 2019. Photo: Angeline Simon.

The mounted photos are from trail cameras I set up in fifty yards around Lethbridge, Alberta.

The texts come from online surveys I undertook to gauge public attitudes towards urban wildlife.

Here I want to show grainy captures of animals that are largely invisible during the day (apart

from birds, deer, and rabbits) and to have people think about these animals as part of a shared ecosystem. Having the images taken from neighbourhood yards around the city, and including actual quotes from regional residents, they are more grounded in the experiential (figures 6.9 – 6.16).

Figure 6.9, installation shot, 24 digital photos on foam core, 4’ x 11,’ 2019. Photo: Angeline Simon.

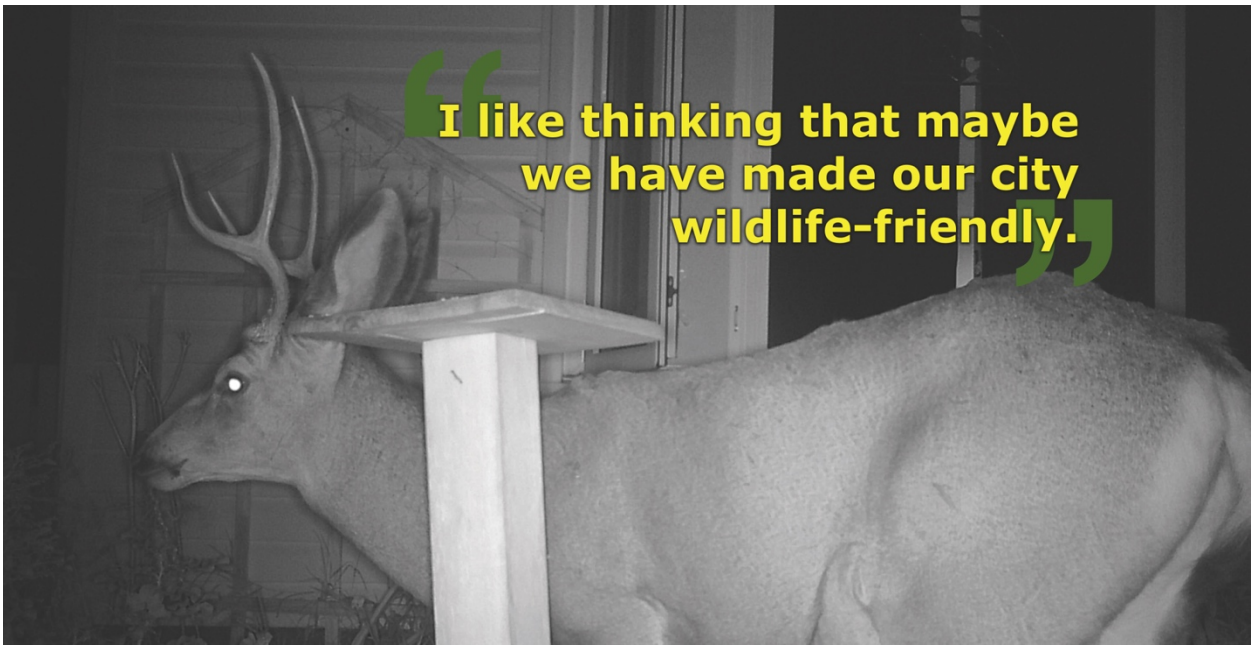


Figure 6.10, untitled, digital photo on foam core, 10.5” x 20.5,” 2019.

Figure 6.11, untitled, digital photo on foam core, 10.5” x 20.5,” 2019.

Figure 6.12, untitled, digital photo on foam core, 10.5” x 20.5,” 2019.

Figure 6.13, untitled, digital photo on foam core, 10.5” x 20.5,” 2019.

Figure 6.14, untitled, digital photo on foam core, 10.5” x 20.5,” 2019.

Figure 6.15, untitled, digital photo on foam core, 10.5” x 20.5,” 2019.

Figure 6.16, untitled, digital photo on foam core, 10.5” x 20.5,” 2019.

The 111 clay skunks were created, in part, at a residency I undertook at Casa arts centre in 2019. Realizing I was not going to be able to complete the desired number of pieces in a timely fashion, I reached out to community members to assist in the process. I staged 3 workshops at Casa arts centre in which people came together to learn a hand building technique,[12] adapt it to their own purposes, and build their own creations. Initially there was only going to be one workshop and a total of 100 skunks. Through word of mouth, more workshops were requested and more skunks produced. The overall quantity is meant to reflect the sheer number of striped skunks living within city limits (figures 6.17 – 6.19).

[12] I received an Alberta Foundation for the Arts Visual Arts Project Grant and was able to have ceramicist Tanya Doody advise as my mentor for the clay skunks residency at Casa.

Figure 6.17, installation shot, “111 Clay Skunks,” clay and underglaze, dimensions variable, 2019. Photo: Angeline Simon.

Figure 6.18, detail, “111 Clay Skunks,” clay and underglaze, dimensions variable, 2019. Photo: Angeline Simon.

Figure 6.19, detail, “111 Clay Skunks,” clay and underglaze, dimensions variable, 2019. Photo: Angeline Simon.

It is important to me to have interactive elements as part of the exhibition. This includes a large neighbourhood map of Lethbridge, with an accompanying list of urban wildlife specific to the city. Each animal is assigned a colour and coloured sticky dots are available to be placed on the map where gallery visitors have seen specified animals (figure 6.20).

Figure 6.20, installation shot, neighbourhood map with coloured dots, 4’ x 6,’ 2019. Photo: Angeline Simon.

Finally, there is a ballot box and ballots available for gallery visitors to vote for their favourite urban animal. The winner of the Helen Schuler exhibition was the striped skunk, with 27 votes. Honourable mentions went to white-tailed/mule deer (24), rabbits/hares (22), raccoons (14), and magpies (10) (figure 6.21).

Figure 6.21, installation shot, ballot box and ballots, plexiglass, paper, pencils, dimensions variable, 2019. Photo: Angeline Simon.

During the Covid pandemic, *Backyard Wilderness* was mounted at the Okotoks Art Gallery, Okotoks, Alberta (2021). A video tour of the exhibition can be found on YouTube: https://www.youtube.com/watch?v=OHNOzpISuSM. *Backyard Wilderness* was also shown at the Crowsnest Pass Public Art Gallery, Blairmore, Alberta in 2022.

6.2 Backyard Wilderness Billboards, 2019

In conjunction with the exhibition at the Helen Schuler Nature Centre and funded through the City of Lethbridge Public Art Small Projects Program, 6 billboards were mounted throughout Lethbridge. These were based on the same images as the trail cameras, married with the same quotes from the surveys as the foamcore mounted pieces (figures 6.22 – 6.25). These images also scrolled on a large screen monitor in the lobby of Casa during the exhibition.

Figure 6.22, untitled, digital image on billboard, 10' x 20,' 2019.

Figure 6.23, untitled, digital image on billboard, 10’ x 20,’ 2019.

Figure 6.24, untitled, digital image on billboard, 10’ x 20,’ 2019.

Figure 6.25, untitled, digital image on billboard, 10’ x 20,’ 2019.

6.3 Backyard Wilderness Utility Box Wrap, Galt Gardens, 1st Ave S. & 7th Street S., Lethbridge, Alberta, 2021

In 2021, I was given the opportunity to produce a *Backyard Wilderness* utility box wrap in Galt Gardens (figures 6.26 – 6.28). This project is courtesy of Public Art Committee, Allied Arts Council and the City of Lethbridge.

Figure 6.26, *Backyard Wilderness*, utility box vinyl wrap, 19.5” x 35” x 23.75,” 2021.

Figure 6.27, *Backyard Wilderness*, utility box vinyl wrap, 19.5” x 35” x 23.75,” 2021.

Figure 6.28, *Backyard Wilderness*, utility box vinyl wrap, 19.5” x 35” x 23.75,” 2021.

6.4 *Burrows & Bungalows*, Casa arts centre, Lethbridge, Alberta, 2022

The second major *Backyard Wilderness* exhibition took place at Casa in 2022 and was titled *Burrows & Bungalows*. My goal was very much in line with the aims of the original exhibition: to give viewers the opportunity to pause and reconsider their relationship to urban wildlife. At this point I wanted to introduce collage as a more overt attempt at advocating for coexistence

through a combination of text and image. Collage seems an appropriate medium for addressing not only fragmentation, but also a coming together of disparate elements to create a unified, working whole (figures 6.29 – 6.36).[13]

Figure 6.29, untitled, paper, coloured pencil, marker, and adhesive, 16” x 20,” 2021.

[13] All collages were produced at a residency at the Gushul Studio in the Crowsnest Pass, funded by an Alberta Foundation for the Arts Visual Arts Individual Project Grant.

Figure 6.30, untitled, paper, coloured pencil, marker, model ground cover, and adhesive, 16” x 20,” 2021.

Figure 6.31, untitled, paper, coloured pencil, marker, and adhesive, 16” x 20,” 2021.

Figure 6.32, untitled, paper, cardboard, coloured pencil, marker, model ground cover, and adhesive, 16” x 20,” 2021.

Figure 6.33, untitled, paper, cardboard, photographs, and adhesive, 16” x 20,” 2021.

Figure 6.34, untitled, paper, coloured pencil, marker, cellophane, and adhesive, 16” x 20,” 2021.

Figure 6.35, untitled, paper, cardboard, coloured pencil, and adhesive, 16” x 20,” 2021.

Figure 6.36, untitled, paper, cardboard, coloured pencil, sticker, and adhesive, 16” x 20,” 2021.

There was also a taxidermized raccoon rummaging through a garbage bin. I like to describe “Hawkins” as the saddest raccoon around. He is found roadkill that was brought to me by a friend’s husband who knows of my interests. The resulting piece conveys a certain shabbiness and desolation which pretty much sums up the Anthropocene, an epoch that centers humans and our impact on resources, other animals, habitats, and speaks to a certain selfish self-determination through conquest and capitalism. At the same time “Hawkins” is fun and has proven attractive to children. During a tour I gave of the exhibition to a scout group, the kids were fascinated by taxidermy and the raccoon that had once been alive. This gives me hope for

the future and furthers my agenda of coexistence (figure 6.37). Above “Hawkins” on the gallery wall is the following quote in vinyl lettering:

> From nature's point of view no creatures are useful or not useful. That's just a foolish distinction applied by people. - Olga Tokarczuk, *Drive Your Plow Over the Bones of the Dead*

Figure 6.37, untitled, taxidermy, Rubbermaid trash bin, assorted detritus, vinyl lettering, dimensions variable, 2022. Photo: Angeline Simon.

“Magpie Table” reflects my desire to show a common species as specimen. Each flocked bird is tagged with a label describing magpie anatomy or behaviour. The antique desk and presentation style are meant to convey an historical, somewhat antiquated, method of interacting with a species of interest (figure 6.38). This piece is based on my experience of seeing a line of labelled Northern Flickers under plexiglass in the Royal Alberta Museum’s ornithology collection.

Figure 6.38, “Magpie Table,” antique wooden desk, wooden doweling, flocked plastic magpie decoys, 4’6” x 24” x 20,” 2022. Photo: Angeline Simon.

The trail cameras I placed around the city revealed skunks as frequent visitors to yards and gardens. The blue wooden skunk family is an ode to these often-maligned creatures (figure 6.39). It has become clear to me that skunks are the urban gardener's friend, eating grasshoppers, grubs, beetles, crickets, cutworms, slugs, mice, ground squirrels, and wasps. They have replaced coyotes as my urban animal obsession and I want to celebrate them as such.

Figure 6.39, "Blue Skunks," plywood and acrylic paint, dimensions variable, 2021. Photo: Angeline Simon.

A selection from *Backyard Wilderness* and *Burrows & Bungalows* was shown at the Red Deer Museum & Art Gallery, Red Deer, Alberta, in Fall 2024 and at the Leighton Art Centre in Millarville, Alberta, in Winter 2025.

***Backyard Wilderness III: Data Portraits*, project space, Casa arts centre, Lethbridge, Alberta, 2023**

In 2023, I struggled with trying to present my data in a more accessible and appealing way. My artist's statement for "Data Portraits" reflects this struggle:

> I began working on projects involving our relationship to wildlife as part of the artists' duo 12 Point Buck (2009-11). I continue to explore it today through exhibitions and public art. Wanting to enrich my understanding of the nature/culture divide, and to use art as a research method, I began my PhD in 2016. People often ask me what I plan to do with a PhD, and I explain that the degree isn't a means to an academic end but a journey—a process through which I have been able to explore my interests in a supportive and challenging environment. My studies have allowed me to investigate our relationship to urban wildlife and to advocate for coexistence through my art practice.
>
> This project, mixing animal portraits with charts and plots, may be the story of missing the mark. My goal is to create low tech, analog representations that are visually appealing, have people want to know more, read the labels, and begin to make sense of the artwork. I don't want people to necessarily understand the data completely, so much as I want them to engage, and think about how urban wildlife fits into their lives. Previous exhibitions and public art projects (such as my billboard series) worked to attain this goal, but do these? I am now hoping to gauge reactions to the work, think more about what it is I want to achieve and how best to achieve it, and ponder it all. On one hand, I am a bit like cartoonist Lynda Barry who said, "I found myself compelled—like this weird, shameful compulsion—to *draw…animals*." On the other hand, my goal really is all about engaging with audiences. To sum up, it's all about process and I'm still working through it (Data Portraits, artist's statement, Casa, Lethbridge, Alberta, 2023).

The data figures incorporated into the drawings were all produced in RStudio. Labels accompany each piece as descriptions on how to best "read" the charts and plots (figures 6.40 – 6.43).

Survey results: People who reported skunk sightings and smellings.

Left to right:
- Skunks not present in yard
- Skunks present in yard

Figure 6.40, “Data Portrait (Striped Skunk)” with accompanying label info, coloured pencil and ink on paper, 11” x 14,” 2023.

Survey results: What is the best way to deal with animals getting hit by vehicles?

Largest to smallest:

- wildlife corridors
- post more signs
- reduce speed limits
- nothing can be done
- too expensive to do anything

Figure 6.41, “Data Portrait (Mule Deer Doe)” and accompanying label info, coloured pencil and ink of paper, 11” x 14,” 2023.

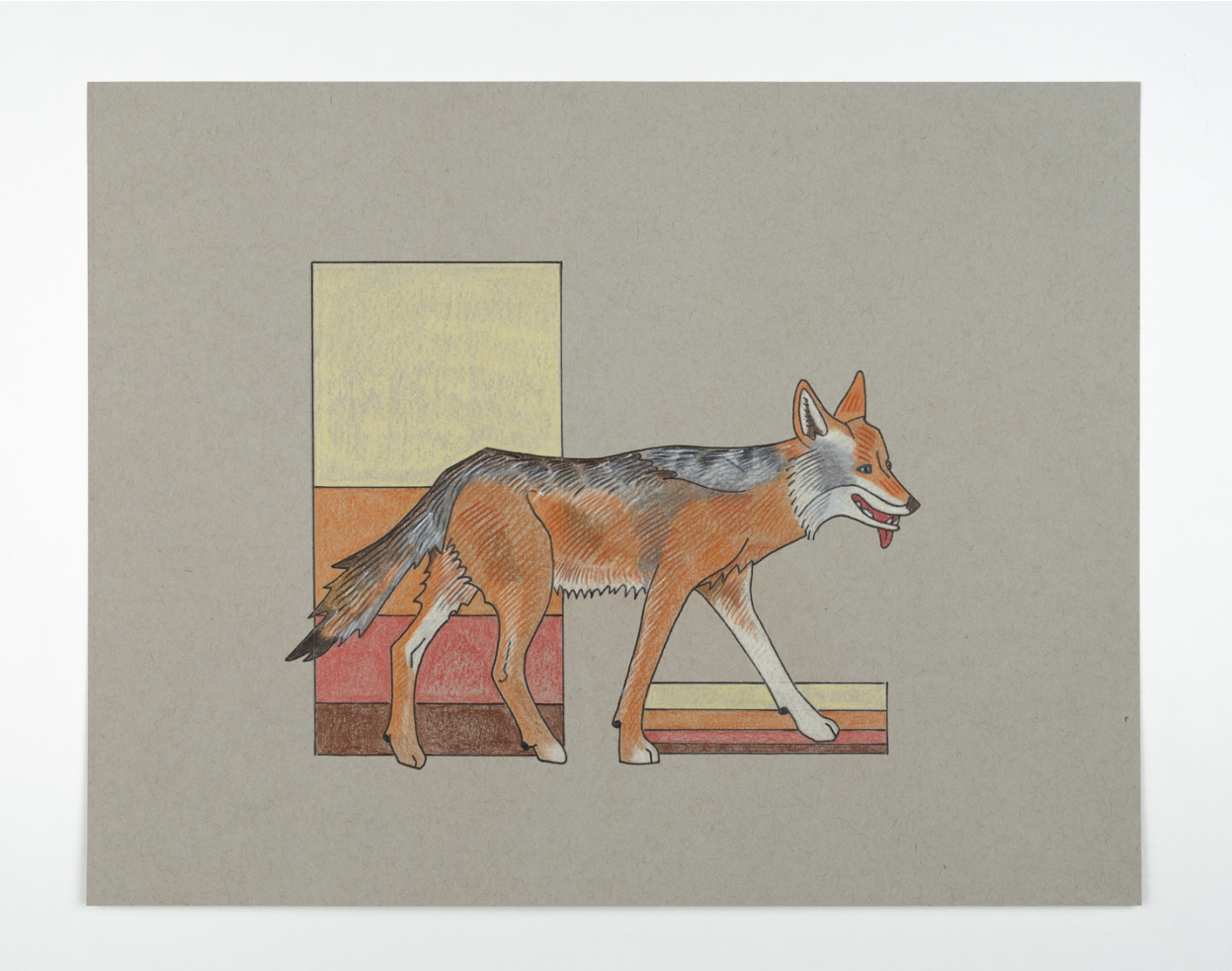
Survey results: Attitudes towards urban wildlife.

Left to right:

- Positive response
- Mixed response
- Neutral response

- Negative response
- Did not respond

Figure 6.42, “Data Portrait (Raccoon)” and accompanying label info, coloured pencil and ink on paper, 11” x 14,” 2023.



Survey results: Attitudes towards urban wildlife.

Left to right:
- Number of respondents who did not report coyote sightings.
- Number of respondents who reported coyote sightings.

Top of bar downwards:
- Positive attitudes
- Mixed attitudes
- Neutral attitudes
- Negative attitudes

Figure 6.43, “Data Portrait (Coyote)” and accompanying label info, coloured pencil and ink on paper, 11” x 14,” 2023.

6.6 *Striped Skunk*, Traffic Signal Box Wrap, 3rd Ave N. & 13th Street N., Lethbridge, Alberta, 2024

My second vinyl wrap is a wallpaper pattern of the striped skunk data portrait. Again, it is meant to both represent the abundance of skunks within city limits as well as celebrate a largely misunderstood neighbour (figure 6.44).

Figure 6.44, “Striped Skunk,” traffic signal box vinyl wrap, 49.5” x 19” x 25.5,” 2024.

6.7 *Skunk Box*, Utility Box Wrap, Valley Road West, University of Lethbridge, Lethbridge, Alberta, 2024

My third vinyl wrap is, once again, dedicated to celebrating skunks. The north side of the box represents a classic skunk profile, directly taken from a camera trap image from a West Lethbridge yard. The west side has a skunk roasting a wiener over a campfire. This is the first time I used an anthropomorphized skunk on a wrap. It stands in direct contrast to the east side image of skunk data. I made this choice first and foremost to be fun, but secondly to make a connection between our world and that of the skunk. I wanted, for the purposes of advocating for coexistence, for viewers to see themselves aligned with the needs of the animal. The south side of the box is a wallpaper pattern of the skunk in profile. The east side stacked bar chart shows the range of responses to the request to rate skunks on a scale of how much you enjoy seeing them within city limits. It demonstrates that many respondents mildly enjoy, enjoy, or enjoy skunks very much. Here I'm hoping that those who do not like skunks might pause to consider what skunk fans see in the animal. Finally, the top of the box is a cartoon skunk with stink waves coming off its hind end and is a tip of the hat to the feature skunks are most known for (figures 6.45 – 6.49).

Figure 6.45, “Skunk Box,” utility box vinyl wrap, 44.5” x 61.25” x 67,” 2024.

Figure 6.46, “Skunk Box,” utility box vinyl wrap, 44.5” x 61.25” x 67,” 2024.

Figure 6.47, “Skunk Box,” utility box vinyl wrap, 44.5” x 61.25” x 67,” 2024.

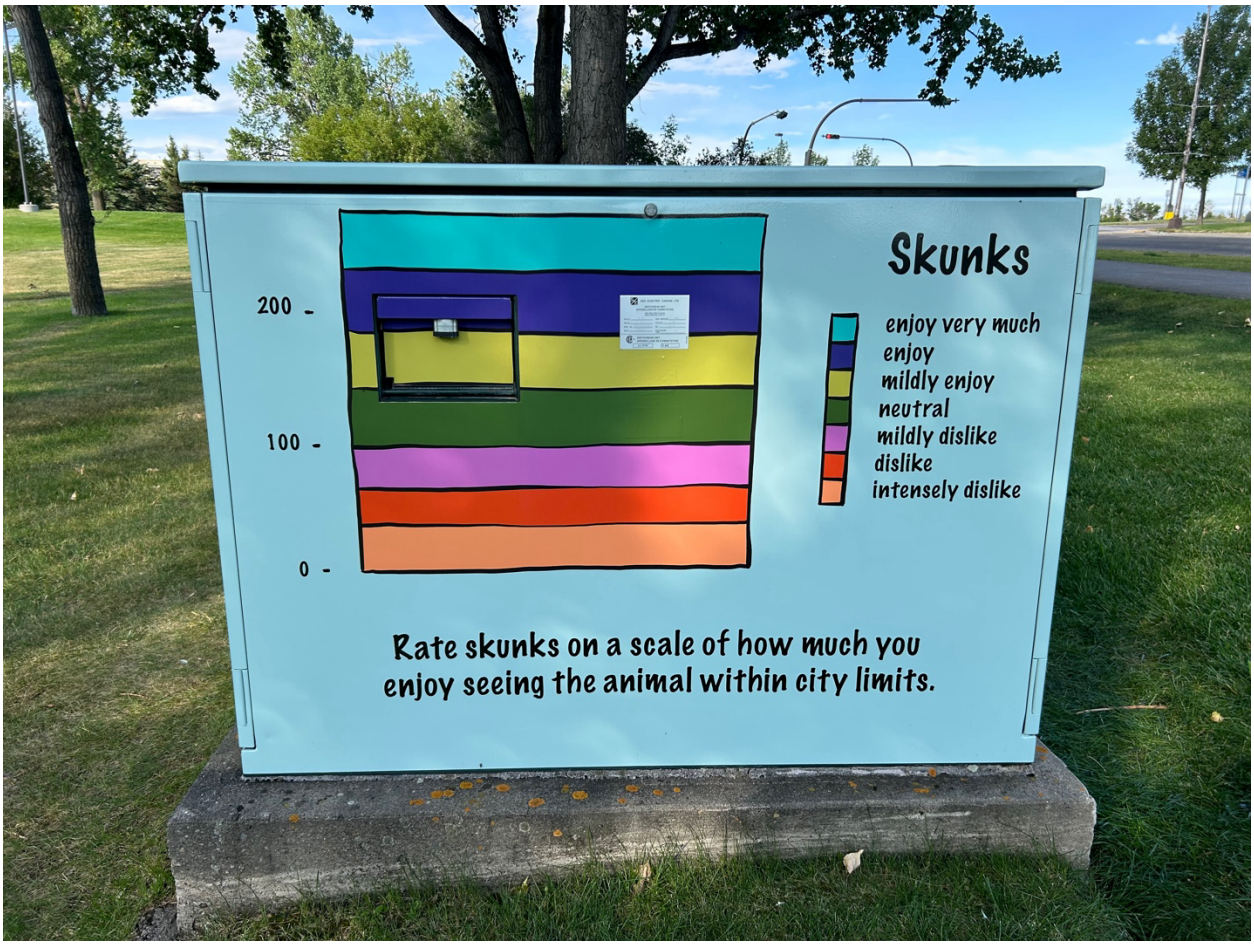


Figure 6.48, “Skunk Box,” utility box vinyl wrap, 44.5” x 61.25” x 67,” 2024.

Figure 6.49, “Skunk Box,” utility box vinyl wrap, 44.5” x 61.25” x 67,” 2024.

6.8 *Backyard Wilderness*, a booklet of data cartoons, 2025.

As an extension of Chapter 4, “An Empirical Survey of Lethbridge Wildlife Prevalence and Attitudes,” I produced a compendium of data cartoons for distribution to a non-academic audience. This collection gives an overview of the data collected from both of the online surveys that appeared on Facebook. Because the project was transdisciplinary and involved the participation of the larger Lethbridgian community, I wanted something concrete that would speak back to that community and relate what I had discovered. Having an interest in cartooning and a graphic drawing style, I felt cartoons would be a good fit.

Throughout the process of producing the booklet it was often assumed by friends and colleagues that I was producing a graphic novel. This could have been because I inaccurately referred to the piece as a "comic book." I was always clear that it wasn't going to be a graphic novel but a collection of cartoons. This is an important distinction as comics and graphic novels deal in narratives stitched together over panels and pages. Cartoons, on the other hand, deal in single-panel one-offs. This is not to say there is no connection between cartoons by the same artist. Cartoons can, and often do, contain consistent characters, settings, and themes. One key difference is that cartoons can be enjoyed one panel at a time.

In many ways it may have been more appealing to my audience and peers to have produced a graphic novel or comic book. Graphic novels and comics are very trendy and of the moment. Over the past decade, they have received quite a bit of attention as seen in the *University Affairs* articles "Research Re-imaged: As academics experiment with the graphic novel form, their research is reaching – and influencing – new audiences" (Klingbeil, 2023) and "Holy Eureka, Batman!: How academics are using comic strips to share their research" (Bilodeau, 2025). Then there's the whole new field of data comics: comics that have a sequential narrative over panels and are meant to visualize data in a more attractive and accessible form (described more eloquently as data-driven story-telling). Shorter than their graphic novel cousins, data comics emphasize data visualization over the narrative. Now this was getting closer to what I wanted to achieve!

I wanted data-driven story-telling without the accompanying linear narrative. Linear narratives have distinct boundaries, a beginning and an end. I wanted a lay person to be able to pick up the booklet, find the graphic drawings appealing, and dive into the data. The collection of panels, not linked by an over-arching narrative, have a shared context, the overall booklet. But

each page is a stand-alone work. Yes, there is still a narrative contained within the subject matter, setting, spatial relationships, etc. of the cartoon, but it's open-ended and not pinned down. Of course, this all begs the question, is the data more accessible as a cartoon. For me, this is almost beside the point: if people *assume* it is more accessible, they may be less frightened or put-off by the content. I do not know the levels of visual literacy of my audience. Some may never have encountered data presented within an academic context. But most, if not all, will have encountered a cartoon. It's a language they can read. Thus, I took very straightforward forms of plotting information, the bar chart and table, and situated them within that language in the hopes of the plots being better understood. No text can be all things to all people but, hopefully the cartoons will resonate with a community that was so participatory.

In conclusion, the *Backyard Wilderness* project has guided my art practice and motivated me to engage publics in ways I had hitherto not embraced. The previous extent of my public art experience was two bus benches I designed as part of *Benchmarks* (1993) and *Bench(re)marks* (1994) by the Vancouver Association for Noncommercial Culture. And although I had hosted drawings events as part of 12 Point Buck, I had not had interactive elements in any exhibitions. The art produced is more than inspired by my studies. It is a working through of the concepts explored, the methods deployed, and the goals embraced. In my chapter "Beyond Boundaries," I investigate art as research through various theories and approaches. "Backyard Wilderness" demonstrates how these theories and approaches have been deployed/realized. The two components are mutually inclusive for me. Combined they have helped me understand the potential of a socially engaged practice and have shifted how I will continue to produce work in the future.

CHAPTER 7

CONCLUSION

Over the past quarter century The Wellcome Collection (a museum and library that links science and medicine to art) has ventured to bring science to the public through engaging art exhibitions and an artist in residence program. It is a combination of art and science that piques curiosity and dares to ask, "what might the world of science gain from these entanglements?" (Arnold, 2017, p. 332). Ken Arnold confesses that while the question has largely gone unanswered, the project remains a valuable one in terms of bringing art and science back together after their Enlightenment divorce. Interdisciplinarity provides an opportunity to pick at and examine the aforementioned tangles to the betterment of both disciplines through combining methods and exploring questions of mutual interest. Arnold explains that art in museums dedicated to the sciences take

> museums back to their early modern origins when they were activated by wonder and curiosity applied to dizzying collections of 'natural' and 'artificial' ingredients, and when it was anticipated that their inherent semi-magical relationships would thereby have powerful effects on those who beheld them (Arnold, 2017, p. 336).

I interject a plea for the wonder and curiosity that interdisciplinarity can foster. What happens when art and science talk to each other and have mutually productive conversations, conversations that ultimately further breakdown barriers between the two, so often reinforced by institutions such as museums and universities? Arnold demonstrates that "In the name of open-ended exploration, Wellcome's shows have…frequently focused as much on how things have been found out as on what actually is known" (Arnold, 2017, p. 339). I interpret this to be a privileging of the "poking and prying" advocated by Louise Barrett (2021) in "Poking and prying

with a purpose: The working art of Donald Lawrence," mentioned earlier in "Chapter 3: Beyond Boundaries."

I have written that "One of the shared realities of art and science is their asking of questions" (see p. 18). Another is the wonder and curiosity discussed by Arnold. After all, we ask questions because we want to explore, study, and discover at least as much as we want answers. It's about process over and above end product. And my dissertation reflects this partiality. It was the process of creating opportunities for engagement that really underpinned the project. What I mean is that I can tell you what animals appear in yards in Lethbridge or I can show you through a series of linocuts that, within the context of a broader exhibition, advocate for coexistence with animals by presenting them as portrait worthy subjects.

Through its coupling of the quantitative and qualitative, through science and art, *Backyard Wilderness* demonstrates that "*The world is more excessive than we can theorise*" (Dewsbury et al. 2002, p. 437). Tangles create intricacies, crossings, and cross-overs. You attempt to follow a thread but then, inevitably, another beautiful thread runs alongside it or is twisted around the original, complicating things. And nothing we try to pick out of the tangles is better standing alone. Instead of trying lay out individual threads in an attempt to show us the way things really are, I have striven to except that "*the world does not add-up*. The world does not resolve or come to rest" (Dewsbury et al. 2002, p. 437). It is always being enacted. I wanted to learn to be robust and scientific and fold these traits to my art practice. Not because I believed they would legitimize my work, or straighten out the threads, but because they would make things more complex and appealing for myself and others. Or so I hoped.

Backyard Wilderness is many threads that combine to make a somewhat messy map of a journey. Why should anybody else care about this? Because "representations…do not have a

message; rather they are transformers, not causes or outcomes of action but actions themselves" (Dewsbury2002, p. 438). Looking at the map you take your own journey. It has routes, sign posts, and little inns along the way where you can pause briefly for something to slake your thirst. It is never going to be the same journey for everyone every time. Yes there are "empirical moments" and hopefully these are not singularly defining but "moments in iterative and disseminative chains and processes" (Dewsbury et al. 2002, p.p. 438-439).

All the threads tangled together are something: a practice, a journey, a way of approaching certain themes, but they are not locked into place or static certainties. They are processes. And artists love process.

See appendix H for a flowchart of the process, outlining my journey.

REFERENCES

Adams, L. W. (2005). Urban wildlife ecology and conservation: A brief history of the discipline. *Urban Ecosystems*, *8*(2), 139–156. http://doi.org/10.1007/s11252-005-4377-7

Alberta Municipal Affairs. (2024, October 18). *Location and history profile*. Retrieved October 22, 2024, from http://www.municipalaffairs.alberta.ca/cfml/MunicipalProfiles/basicReport/CITY.PDF

AMA Insurance. (n.d.). *Wildlife road safety tips*. https://ama.ab.ca/articles/wildlife-road-safety-tips

Armstrong, L. (2023). The nature-culture divide: Making change at the unruly edges. *Comparative Media Arts Journal*, (13), 1–16. https://www.sfu.ca/cmajournal/issues/issue-thirteen--the-outside/Leila-Armstrong.html

Arnold, K. (2017). A very public affair: Art meets science. *Interdisciplinary Science Reviews*, *42*(4), 331–344. https://doi.org/10.1080/03080188.2017.1381224

Axelson, G. (2019, September 19). *Vanishing: More than 1 in 4 birds has disappeared in the last 50 years*. All About Birds. https://www.allaboutbirds.org/news/vanishing-1-in-4-birds-gone/

Ayed, N. (Host). (2020, October 28). The forest floor of the art world: Marc Mayer at MOCA [Audio podcast episode]. In *CBC Ideas*. CBC Radio One. https://www.cbc.ca/listen/live-radio/1-23-ideas/clip/15773206-the-forest-floor-art-world-marc-mayer-moca

Bagdassarian, C. K. (2009). Naturalists, artists, and language. *Conservation Biology, 23*(6), 1639–1640. https://www.jstor.org/stable/40419205

Baker, P. J., & Harris, S. (2007). Urban mammals: What does the future hold? An analysis of the factors affecting patterns of use of residential gardens in Great Britain. *Mammal Review, 37*(4), 297–315. https://doi.org/10.1111/j.1365-2907.2007.00102.x

Barrett, E. (2007). Experiential learning in practice as research: Context, method, knowledge. *Journal of Visual Art Practice, 6*(2), 115–124. https://doi.org/10.1386/jvap.6.2.115_1

Barrett, L. (2021). Poking and prying with a purpose: The working art of Donald Lawrence. In D. Lawrence, J. Mills, & E. Dundas Oke (Eds.), *Art, research, play: The Midnight Sun Camera Obscura project* (pp. 285–299). University of Lethbridge Art Gallery.

Beeber, A. (2023, July 29). Lethbridge ranked No. 2 in Canada for green space. *Lethbridge Herald*. https://lethbridgeherald.com/news/lethbridge-news/2023/07/29/lethbridge-ranked-no-2-in-canada-for-green-space/

Bernstein, L. (2007). *The infinite variety of music*. Amadeus Press.

Bilodeau, M. (2025, August 06). Holy Eureka, Batman! How academics are using comic strips to share their research. *University Affairs*. https://universityaffairs.ca/news/holy-eureka-batman/

Blumenstein, D. (2018, July 11). Illustrations vs Cartoons vs Comics: What's the difference, and when do I use each one? *Medium*. https://davidblumenstein.medium.com/illustrations-vs-cartoons-vs-comics-9babcc09f999

Boakes, Z., Stafford, R., Bramer, I., Cvitanović, M., & Hardouin, E. A. (2024). The importance of urban areas in supporting vulnerable and endangered mammals. *Urban Ecosystems, 27*(3), 883–894. https://doi.org/10.1007/s11252-023-01492-z

Borghini, A. (2019, February 23). *The nature–culture divide*. ThoughtCo. https://www.thoughtco.com/nature-culture-divide-2670633

Bourdieu, P. (1984). *Distinction: A social critique of the judgement of taste* (R. Nice, Trans.). Harvard University Press. (Original work published 1979)

Bryer, J., & Speerschneider, K. (2016). *likert: Analysis and visualization of Likert items* (Version 1.3.5) [R package]. CRAN. https://CRAN.R-project.org/package=likert

Bürkner, P. -C. (2021). brms: An R package for Bayesian multilevel models using Stan. *Journal of Statistical Software, 80*(1), 1–28. https://doi.org/10.18637/jss.v080.i01

Carson, R. (1962). *Silent Spring*. Houghton Mifflin.

Cazeaux, C. (2017). *Art, research, philosophy*. Routledge.

Choy, T. K., Faier, L., Hathaway, M. J., Inoue, M., Satsuka, S., & Tsing, A. (2009). A new form of collaboration in cultural anthropology: Matsutake worlds. *American Ethnologist*, *36*(2), 380–403. https://doi.org/10.1111/j.1548-1425.2009.01141.x

City of Lethbridge. (n.d.-a). *Maps*. https://www.lethbridge.ca/planning-development/maps/

City of Lethbridge. (n.d.-b). *Neighbourhood maps*. https://www.lethbridge.ca/community-services-supports/neighbourhood-maps/

City of Lethbridge. (n.d.-c). *Parks and playgrounds*. https://www.lethbridge.ca/parks-leisure-recreation/parks-and-playgrounds/

City of Lethbridge. (2018, February 8). *Environment & historic resources strategy: An exploration of environmental and historic resources in the city of Lethbridge*. https://www.lethbridge.ca/media/3ruh5jhv/environment-and-historic-resources-strategy.pdf

City of Lethbridge. (2023, June 27). *Municipal census results show growing Lethbridge population*. https://www.lethbridge.ca/news/posts/municipal-census-results-show-growing-lethbridge-population/

City of Lethbridge. (2024, July 24). *Lethbridge census online: 2023 census results*. https://www.lethbridge.ca/media/3kpd0xgq/2023-census-report-compiled.pdf

Clark, A., & Chalmers, D. (1998). The extended mind. *Analysis*, *58*(1), 7–19. https://doi.org/10.1093/analys/58.1.7

Cooper, C., Larson, L., Dayer, A., Stedman, R., & Decker, D. (2015). Are wildlife recreationists conservationists? Linking hunting, birdwatching, and pro-environmental behavior. *The Journal of Wildlife Management*, *79*(3), 446–457. https://doi.org/10.1002/jwmg.855

Cronon, W. (1996). The trouble with wilderness, or, Getting back to the wrong nature. *Environmental History*, *1*(1), 7–28. http://www.jstor.org/stable/3985059

Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the National Academy of Sciences*, *111*(Suppl. 4), 13614–13620. https://doi.org/10.1073/pnas.1320645111

Daston, L., & Galison, P. (2007). *Objectivity*. Zone Books.

Dear, M. (2011). Geocreativity. In M. Dear, J. Ketchum, S. Luria, & D. Richardson (Eds.), *GeoHumanities: Art, history, text at the edge of place* (pp. 5–8). Routledge.

Derksen, M. (2005). Against integration: Why evolution cannot unify the social sciences. *Theory & Psychology*, *15*(2), 139–162. https://doi.org/10.1177/0959354305051360

Dewey, J. (2005). *Art as experience*. Perigee. (Original work published 1934)

Dewsbury, J. D., Harrison, P., Rose, M., & Wylie, J. (2002). Enacting geographies. *Geoforum*, *33*(4), 437–440. https://doi.org/10.1016/s0016-7185%2802%2900029-5

Donihue, C. M., & Lambert, M. R. (2015). Adaptive evolution in urban ecosystems. *Ambio*, *44*(3), 194–203. https://www.jstor.org/stable/24670711

Duff, J., Baldwin, H., Coveny, J., & Martin, K. (Writers), & Brown, A. (Director). (2007, June 25). Grave doubts (Season 3, Episode 2) [TV series episode]. In J. Duff (Executive Producer), *The closer*. The Shephard/Robin Company; Walking Entropy; Warner Bros. Television.

Edwardson, L. (2018, June 8). *Why it's not always good to relocate a mother skunk*. CBC News. https://www.cbc.ca/news/canada/calgary/baby-skunks-alberta-institute-wildlife-conservation-1.4696887

Evernden, N. (1992). *The social creation of nature*. Johns Hopkins University Press.

Fact Animal. (2024). *Skunk facts*. Retrieved April 4, 2025, from https://factanimal.com/skunk/

Farrell, J. (2024, August 21). *Alberta's roadkill numbers soar with more than 7,000 animals reported hit and killed last year*. CBC Edmonton. https://www.cbc.ca/news/canada/edmonton/alberta-s-roadkill-numbers-soar-with-more-than-7-000-animals-reported-hit-and-killed-last-year-1.7300404

Fortwangler, C. (2013). Untangling introduced and invasive animals. *Environment and Society*, *4*(1), 41–59. https://www.jstor.org/stable/43297036

The Fur-Bearers. (2023). *Five facts you need to know about skunks in your neighbourhood*. https://thefurbearers.com/blog/five-facts-you-need-to-know-about-skunks-in-your-neighbourhood/

Gabry, J., & Mahr, T. (2024). *bayesplot: Plotting for Bayesian models* (Version 1.11.1) [R package]. https://mc-stan.org/bayesplot/

Galison, P. (1997). *Image and logic: A material culture of microphysics*. University of Chicago Press.

Global News (2018, February 23). *Drumheller coyote climbs tree for some apples* [Video]. https://globalnews.ca/video/4043428/drumheller-coyote-climbs-tree-for-some-apples

Gongadze, S. (2023, July 11). *How 3 cities are transforming to adapt to climate change*. World Economic Forum. https://www.weforum.org/agenda/2023/07/cities-transforming-systems-climate-change-adaptation/

Government of Alberta. (n.d.-a). *Human-wildlife conflict—Moose*. https://www.alberta.ca/moose

Government of Alberta. (n.d.-b). *Human-wildlife conflict—Raccoons*. https://www.alberta.ca/raccoons

Government of Alberta. (n.d.-c). *Human-wildlife conflict—Skunks*. https://www.alberta.ca/skunks

Government of Alberta. (2021, Fall). *Raccoon roundworms*. https://open.alberta.ca/dataset/71f0de34-9d07-4ccd-9b49-a5168becb42c/resource/c27a775d-04a6-4011-98c3-457605558f41/download/aep-raccoon-roundworms-2021-10.pdf

Government of Canada. (2023, January 20). *Healthy cities research initiative*. https://cihr-irsc.gc.ca/e/51570.html

Grade, A. M., Warren, P. S., & Lerman, S. B. (2022). Managing yards for mammals: Mammal species richness peaks in the suburbs. *Landscape and Urban Planning*, *220*, Article 104337. https://doi.org/10.1016/j.landurbplan.2021.104337

Inglis, D., & Bone, J. (2006). Boundary maintenance, border crossing, and the nature/culture divide. *European Journal of Social Theory, 9*(2), 272–287. https://doi.org/10.1177/1368431006064188

Ingold, T. (2013). *Making: Anthropology, archaeology, art and architecture*. Routledge.

Jardine, N., & Spary, E. C. (1996). The natures of cultural history. In N. Jardine, J. A. Secord, & E. C. Spary (Eds.), *Cultures of natural history* (pp. 3–13). Cambridge University Press.

Kemp, M. (2011). Artists in the lab. *Nature, 477*(7364), 278–279. https://www.nature.com/articles/477278a

Kilpatrick, H. J., & Spohr, S. M. (2000). Spatial and temporal use of a suburban landscape by female white-tailed deer. *Wildlife Society Bulletin, 28*(4), 1023–1029. https://www.jstor.org/stable/3783862

Klingbeil, C. (2023, May 03). Research re-imagined: As academics experiment with the graphic novel form, the research is reaching – and influencing – new audiences. *University Affairs*. https://universityaffairs.ca/features/research-re-imagined/

Kowarik, I. (2011). Novel urban ecosystems, biodiversity, and conservation. *Environmental Pollution*, 159(8–9), 1974–1983. https://doi.org/10.1016/j.envpol.2011.02.022

Lamb, G. (2020, September 10). *Nature: The most complex word in the English language*. Medium. https://medium.com/curious/nature-the-most-complex-word-in-the-english-language-8992b983f0e3

Latham, A. D. M. (2008). Evidence of raccoon (*Procyon lotor*) range extension in northern Alberta. *Canadian Field-Naturalist*, *122*(2), 176–178. https://doi.org/10.22621/cfn.v122i2.581

Latour, B. (1986). Visualization and cognition: Thinking with eyes and hands. In H. Kuklick (Ed.), *Knowledge and society: Studies in the sociology of culture past and present* (Vol. 6). JAI Press. http://www.bruno-latour.fr/sites/default/files/21-DRAWING-THINGS-TOGETHER-GB.pdf

Lau, B. (2006). Jane Austen and John Keats: Negative capability, romance and reality. *Keats-Shelley Journal*, *55*, 81–110. https://www.jstor.org/stable/30210646

Le Guin, U. K. (2019). *The carrier bag theory of fiction*. Ignota. (Original work published 1988)

Luckhurst, R. (2006). Bruno Latour's scientifiction: Networks, assemblages, and tangled objects. *Science Fiction Studies*, *33*(1), 4–17. https://www.jstor.org/stable/4241405

Magle, S. B., Hunt, V. W., Vernon M., & Crooks, K. R. (2012). Urban wildlife research: Past, present, and future. *Biological Conservation*, *155*, 23–32. https://doi.org/10.1016/j.biocon.2012.06.018

Malik, K. (2000). *Man, beast and zombie: What science can and cannot tell us about human nature*. Weidenfeld & Nicolson.

Manfredo, M. J., Urquiza-Haas, E. G., Don Carlos, A. W., Bruskotter, J. T., & Dietsch, A. M. (2020). How anthropomorphism is changing the social context of modern wildlife conservation. *Biological Conservation*, *241*, Article 108297. https://doi.org/10.1016/j.biocon.2019.108297

McCammon, S. (2025, March 22). *How empathy came to be seen as a weakness in conservative circles*. NPR. https://www.npr.org/2025/03/22/nx-s1-5321299/how-empathy-came-to-be-seen-as-a-weakness-in-conservative-circles

McCarney, P. (2018, August 1). Anthropomorphism: What is it and can it benefit conservation? *Landscapes & Letters*. https://landscapesandletters.com/2018/08/01/anthropomorphism-can-it-benefit-conservation/

McSheffrey, E. (2014, January 13). Moose on the loose: Deep snow resulting in more moose, deer following trails to city this winter. *The Daily Herald-Tribune*, A.3.

Miller, A. (2015). *Skunk*. Reaktion Books.

Miller, G. (Host). (2019, March 6). Tim Ingold: "Anthropology's subject is humanity unsliced" [Audio podcast episode]. In *The Hedgehog & the Fox*. https://www.podularity.com/thehedgehogandthefox/2019/03/06/tim-ingold-anthropologys-subject-is-humanity-unsliced/

Muir, J. (1911). *My First Summer in the Sierra*. Houghton Mifflin.

Nix, J. H., Howell, R. G., Hall, L. K., & McMillan, B. R. (2018). The influence of periodic increases of human activity on crepuscular and nocturnal mammals: Testing the weekend effect. *Behavioural Processes, 146*, 16–21. https://doi.org/10.1016/j.beproc.2017.11.002

Noë, A. (2004). *Action in perception*. MIT Press.

Noë, A. (2012). *Varieties of presence*. Harvard University Press.

Noë, A. (2015a, October 9). *Strange tools: Art and human nature | Alva Noë | Talks at Google*. [Video]. YouTube. https://www.youtube.com/watch?v=VcidL9uXw6A

Noë, A. (2015b). *Strange tools: Art and human nature*. Hill & Wang.

Noë, A. (2023). *The entanglement: How art and philosophy make us what we are*. Princeton University Press.

North American Auction Co. (2019). *Lot 137: Winchester advertising "Avoid trouble" print*. Retrieved September 5, 2025, from https://live.naabid.com/online-auctions/north-american-auction/winchester-advertising-avoid-trouble-print-1442554

Peterle, G. (2021). *Comics as a research practice: Drawing narrative geographies beyond the frame*. Routledge. https://doi.org/10.4324/9781003058069

Poisson, M. K. P., Butler, A. R., Tate, P., Bergeron, D. H., & Moll, R. J. (2023). Species-specific responses of mammal activity to exurbanization in New Hampshire, USA. *Journal of Urban Ecology*, *9*(1), Article juad010. https://doi.org/10.1093/jue/juad010

Procko, M., Naidoo, R., LeMay, V., & Burton, A. C. (2023). Human presence and infrastructure impact wildlife nocturnality differently across an assemblage of mammalian species. *PLOS One*, *18*(5), Article e0286131. https://doi.org/10.1371/journal.pone.0286131

Pulsifer, M. (2021). *When skunks become a nuisance*. Nova Scotia Department of Natural Resources and Renewables. https://novascotia.ca/natr/WILDLIFE/nuisance/skunks.asp

R Foundation. (2022). *The R project for statistical computing* [Computer software]. https://www.R-project.org/

Ramalho, C. E., & Hobbs, R. J. (2012). Time for a change: Dynamic urban ecology. *Trends in Ecology & Evolution*, *27*(3), 179–188. https://doi.org/10.1016/j.tree.2011.10.008

Re/Max. (2023). *Data green cities*. Retrieved September 5, 2025, from https://docs.google.com/spreadsheets/d/1Z0b9LJEr2uUVQ1T2u_qm-wMhD9CE7x5sFt1kqT8ctxQ/edit#gid=0

Roden-Reynolds, P., Kent, C. M., Li, A. Y., & Mullinax, J. M. (2022). Patterns of white-tailed deer movements in suburban Maryland: Implications for zoonotic disease mitigation. *Urban Ecosystems*, *25*(6), 1925–1938. https://doi.org/10.1007/s11252-022-01270-3

Rolston III, H. (1997). Nature for real: Is nature a social construct? In T. D. J. Chappell (Ed.), *The philosophy of the environment* (pp. 38–64). Edinburgh University Press.

Rorty, R. (1998). Against unity. *The Wilson Quarterly*, *22*(1), 28–38. https://www.jstor.org/stable/40260489

Schlegel, L. (2018). Our smelly neighbour—The striped skunk. *Alberta Institute for Wildlife Conservation*. https://www.aiwc.ca/blog/our-smelly-neighbour-the-striped-skunk/

Schuttler, S. G., Sorensen, A. E., Jordan, R. C., Cooper, C., & Shwartz, A. (2018). Bridging the nature gap: Can citizen science reverse the extinction of experience? *Frontiers in Ecology and the Environment*, *16*(7), 405–411. https://doi.org/10.1002/fee.1826

Somerville, K., Dickman, A., Johnson, P. J., & Hart, A. G. (2021). Soap operas will not wash for wildlife. *People and Nature*, *3*(6), 1160–1165. https://doi.org/10.1002/pan3.10202

Statista. (2024, July). Share of Facebook users in the United States as of July 2024, by age group. https://www.statista.com/topics/5323/facebook-usage-in-the-united-

states/#:~:text=Facebook%20is%20often%20regarded%20as,years%20as%20of%20July%20202
4

Statistics Canada. (2015, November 27). Self-contained labour areas: A proposed delineation and classification by degree of rurality. *Rural and Small Town Canada Analysis Bulletin*, *8*(8), 1–33. https://www150.statcan.gc.ca/n1/pub/21-006-x/2008008/section/s2-eng.htm

Statistics Canada. (2022, February 9). *Canada's large urban centres continue to grow and spread*. The Daily. https://www150.statcan.gc.ca/n1/daily-quotidien/220209/dq220209b-eng.htm

Statistics Canada. (2024, October 8). *Canada goes urban*. Canadian Megatrends. https://www150.statcan.gc.ca/n1/pub/11-630-x/11-630-x2015004-eng.htm

Sterelny, K. (2010). Minds: Extended or scaffolded? *Phenomenology and the Cognitive Sciences, 9*(4), 465–481. https://doi.org/10.1007/s11097-010-9174-y

Stoffregen, T. A., & Wagman, J. B. (2025). Higher order affordances. *Psychonomic Bulletin & Review*, *32*, 1–30. https://doi.org/10.3758/s13423-024-02535-y

Summerfield, P. (2024, June 24). *Facebook still the most popular social network among Canadian adults*. Media in Canada. https://mediaincanada.com/2024/06/24/facebook-still-the-most-popular-social-network-among-canadians

SurveyMonkey. (1999-2025.). *SurveyMonkey* [Online survey software]. Momentive Inc. https://www.surveymonkey.com

Trading Economics. (2025). *Canada – Urban population (% of total)*. Retrieved September 3, 2025, from https://tradingeconomics.com/canada/urban-population-percent-of-total-wb-data.html

Tsing, A. L. (2015). *The mushroom at the end of the world: On the possibility of life in capitalist ruins*. Princeton University Press.

United Nations. (2014, July 10). *2014 revision of the world urbanization prospects*. Department of Economic and Social Affairs. https://www.un.org/en/development/desa/publications/2014-revision-world-urbanization-prospects.html.

United Nations. (2018, May 16). *68% of the world population projected to live in urban areas by 2050, says UN*. Department of Economic and Social Affairs. https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html

Washington Department of Fish and Wildlife. (2025). *Facts about Washington skunks*. Retrieved September 4, 2025, from https://wdfw.wa.gov/species-habitats/living/species-facts/skunks#facts

Wickham, H. (2016). *ggplot2: Elegant graphics for data analysis*. Springer.

Wildlife Center of Virginia. (2025). *Skunks as neighbors*. Retrieved September 4, 2025, from https://wildlifecenter.org/help-advice/managing-wildlife-conflicts-and-habitats/skunks-neighbors

Wilke, C. O. (2018). *ggridges: Ridgeline plots in "ggplot2"* (Version 0.5.1) [R package]. CRAN. https://CRAN.R-project.org/package=ggridges

Wilke, C. O. (2021). *ggridges: Ridgeline plots in "ggplot2"* (Version 0.5.3) [R package]. CRAN. https://CRAN.R-project.org/package=ggridges

Williams, R. (1972). Ideas of nature. In J. Benthall (Ed.), *Ecology: The shaping enquiry* (pp. 146–164). Longman.

Williams, R. (1983). *Keywords: A vocabulary of culture and society*. Oxford University Press.

Wilson, A. (1991). *The culture of nature: North American landscape from Disney to the Exxon Valdez*. Between the Lines.

Wilson, K. (2018, November 13). *Deer rut timeline: The 7 stages and how to hunt them*. Guide Fitter. https://www.guidefitter.com/blog/deer-rut-timeline-the-7-stages-and-how-to-hunt-them

Wilson, S. (2025, February 17). *Winter survival: Why wildlife seek refuge within city limits*. Discover Estevan. https://www.discoverestevan.com/articles/winter-survival-why-wildlife-seek-refuge-within-city-limits

Zimmer, K. (2024, December 18). *Humans are forcing the rapid evolution of wildlife: Can animals change fast enough?* National Wildlife Federation. https://www.nwf.org/Magazines/National-Wildlife/2025/Winter/Conservation/Rapid-Evolution

APPENDIX A:

RECRUITMENT BROCHURE

The goal is to turn Lethbridgians into citizen scientists involved in mapping the variety of species with which we share our city. What animals are thriving is close proximity to us? Where are the densest populations of these urban dwellers? And what do their movements through our backyards, parks, and alleys tell us about not only them, but also ourselves?

The process involves the placement of 1 – 4 trail cameras on your property for a period of a week to fourteen days.

If you suspect there may be critters visiting your property during the day and/or night, and would like to participate in the project, please contact Leila Armstrong at backyardwilderness@shaw.ca

I am a graduate student at the University of Lethbridge interested in documenting urban wildlife within city limits. My project involves capturing images of animals such as coyotes, deer, rabbits, hares, raccoons, porcupines, skunks (and other nocturnal explorers) in people's backyards using trail cameras.

- Leila Armstrong

University of Lethbridge

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www.uleth.ca/artsci/psychology

Backyard Wilderness Trail Cam Project

www.backyardwilderness.info
backyardwilderness@shaw.ca

Would you like to know what wildlife visits your backyard?
Join Backyard Wilderness: an investigation into the urban ecology of Lethbridge.

SAMPLE CONSENT FORM:

Dear Participant,

You are invited to participate in this study which tracks and records the movement of wildlife (such as coyotes, deer, rabbits, raccoons, porcupines, and skunks) through the backyards, parks, and alleyways of Lethbridge, Alberta. In direct consultation with you, and in your presence, 1 – 4 trail cameras will be placed on your property for a period of 7 – 14 days. They will be retrieved afterwards at an agreed date and time.

You should be aware that you sacrifice no rights by agreeing to participant in this research. You have the right to withdraw from this study at any time and for any reason. Any information you provide will remain confidential and anonymous. Should you consent to participate, you will only be identified by a pseudonym and approximate age category. Your property will be identified as being located in 1 of 12 Lethbridge regions (4 in West Lethbridge, 4 in North Lethbridge, and 4 in South Lethbridge).

There are no risks or discomfort during this research, nor are there any direct benefits to you in doing this research. All the same, should you have any questions or concerns regarding your participation you may ask the primary researchers PhD Student Leila Armstrong or Professor Louise Barrett, whose contact details are provided above. Questions regarding your rights as a participant in this research may be addressed to the Office of Research Services, University of Lethbridge (phone: 403-329-2747; email: research.services@uleth.ca).

Your participation in this study is completely voluntary. While we are certainly interested in the data you may provide, we hope that you will view your role in this study as an active co-investigator. The only way this is possible is if you feel you are fully informed.

Feel free to ask questions you deem relevant at any time. In fact, we encourage your input in what we are doing and we will answer your questions to the best of our ability. Any comments or suggestions you may have about the research are greatly appreciated.

Please contact PhD Student Leila Armstrong or Professor Louise Barrett at any time to check on the progress of the research. The data you provide, when combined with that of the other participants, will be used in scientific publications and presentation at scientific conferences.

By signing below you are consenting to participate in Backyard Wilderness: an investigation into the urban ecology of Lethbridge.

Print name: _____

Signature: _____

Date: _____

With best wishes,
Leila Armstrong
Louise Barrett, Ph.D.
backyardwilderness@shaw.ca

Interview Questions:

1. What makes you suspect there may be wild animals visiting your property?
2. Do you think there are any aspects of your property that make it attractive to wild animals?
3. How do you feel about animals visiting your property? Do you think of them as pests or do you like the idea of them visiting? Can you elaborate on why you feel one way or the other?
4. Is there anything else you'd like to tell us about the animals that visit your property and/or how you feel about wild animals being present within city limits?
5. Would you like us to send you digital copies of the images of the animals we find visiting your property, if we find any?
6. Would you be willing to have us revisit your property with the camera(s) during other seasons?
7. To which age-range category do you belong: 18-31, 32-45, 46-59, 60-73, 73-86, and 87+?

APPENDIX B:

CONSENT FORM

[Printed on University of Lethbridge Letterhead.]

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Louise Barrett, PhD
Department: Psychology
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Dear Participant,

You are invited to participate in this study which tracks and records the movement of wildlife (such as coyotes, deer, rabbits, raccoons, porcupines, and skunks) through the backyards, parks, and alleyways of Lethbridge, Alberta. In direct consultation with you, and in your presence, 1 – 4 trail cameras will be placed on your property for a period of 7 – 14 days. They will be retrieved afterwards at an agreed date and time.

You should be aware that you sacrifice no rights by agreeing to participant in this research. You have the right to withdraw from this study at any time and for any reason. Any information you provide will remain confidential and anonymous. Should you consent to participate, you will only be identified by a pseudonym and approximate age category. Your property will be identified as being located in 1 of 12 Lethbridge regions (4 in West Lethbridge, 4 in North Lethbridge, and 4 in South Lethbridge).

There are no risks or discomfort during this research, nor are there any direct benefits to you in doing this research. All the same, should you have any questions or concerns regarding your participation you may ask the primary researchers PhD Student Leila Armstrong or Professor Louise Barrett, whose contact details are provided above. Questions regarding your rights as a participant in this research may be addressed to the Office of Research Services, University of Lethbridge (phone: 403-329-2747; email: research.services@uleth.ca).

Your participation in this study is completely voluntary. While we are certainly interested in the data you may provide, we hope that you will view your role in this study as an active co-investigator. The only way this is possible is if you feel you are fully informed.

Feel free to ask questions you deem relevant at any time. In fact, we encourage your input in what we are doing and we will answer your questions to the best of our ability. Any comments or suggestions you may have about the research are greatly appreciated.

Please contact PhD Student Leila Armstrong or Professor Louise Barrett at any time to check on the progress of the research. The data you provide, when combined with that of the other participants, will be used in scientific publications and presentation at scientific conferences.

By signing below you are consenting to participate in Backyard Wilderness: an investigation into the urban ecology of Lethbridge.

_____	_____	_____
(print name)	(signature)	(date)

With best wishes,

Leila Armstrong
Louise Barrett, PhD

APPEDNIX C:

FIRST SURVEY QUESTIONS

1. In which region of Lethbridge do you live? West Lethbridge, North Lethbridge, South Lethbridge or Other?
2. Do you believe wild animals visit your property?
3. If yes, which types of animals? (For example, skunks, raccoons, porcupines, deer, coyotes, etc..)
4. If applicable, what make you suspect there may be wild animals visiting your property? (For example, footprints, scat, sightings, etc..)
5. Do you think there are any aspects of your property that make it attractive to wild animals?
6. If yes, what are those aspects? (For example, location, compost, woodpile, etc..)
7. How do you feel about animals visiting your property? Do you think of them as pests or do you like the idea of them visiting?
8. Can you elaborate on why you feel one way or the other?
9. Is there anything else you'd like to tell us about the animals that visit your property and/or how you feel about wild animals being present within city limits?
10. To which age-range category do you belong: 18-31, 32-45, 46-59, 60-73, 74-86, and 87+?

APPENDIX D:

SECOND SURVEY QUESTIONS

1. Age: 18-24, 25- 34, 35-44, 45-54, 55-64, 65-74, 75-84, and 85+.
2. Preferred pronouns: he/him, she/her, they/them, and other.
3. Type of residence where you live: detached single family dwelling or house, duplex, row house/townhouse, apartment, and other.
4. Area of the City of Lethbridge where you live: North, South, West, and outside of Lethbridge.
5. Were you raised in a small town (1,000 - 9,999), a large town/small city (10,000 - 99,999), a city (100,000+), a suburban area, on a farm, on a reserve, semi-rural area, or rural area.
6. Highest level of education: some high school, completed high school, some trade school/vocational training, completed trade school/vocational training, some college/university, completed Assoc. degree, completed bachelor's degree, completed master's degree, completed PhD, or Other.
7. Does wildlife visit your property? Yes, No, or I don't know.
8. Please check all wildlife that visits: Deer, Skunks, Rabbits/Hares, Raccoons, Coyotes, Porcupines, Badgers, Mice, Ground Squirrels, Rattlesnakes, Magpies, Crows, Gulls, Chickadees, Robins, Starlings, Grackles, Blue Jays, Northern Flickers, Woodpeckers, Great Horned Owls, Swainson's Hawks, Other mammals, Other birds, or Other amphibians/reptiles.
9. Rate **deer** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

10. Rate **skunks** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

11. Rate **rabbits/hares** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

12. Rate **raccoons** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

13. Rate **coyotes** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

14. Rate **porcupines** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

15. Rate **badgers** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

16. Rate **mice** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

17. Rate **ground squirrels** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

18. Rate **rattlesnakes** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

19. Rate **magpies** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

20. Rate **crows** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

21. Rate **gulls** on a scale of how much you enjoy seeing the animal within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

22. Rate **other bird species** in general on a scale of how much you enjoy seeing them within city limits: intensely dislike, dislike, mildly dislike, neutral, mildly enjoy, enjoy, and enjoy very much.

23. Do you have a dog(s)? Yes or No.

24. Has your dog(s) had an interaction with wildlife within city limits? Yes, No, or N/A.

25. Was the interaction positive, negative or neutral? Positive, Negative, Neutral, or N/A.

26. If applicable, please describe the interaction:

27. Do you have a cat(s)? Yes or No.

28. Has your cat(s) had an interaction with wildlife within city limits? Yes, No, or N/A.

29. Was the interaction positive, negative or neutral? Positive, Negative, Neutral, or N/A.

30. If applicable, please describe the interaction:

31. Has your cat(s) ever killed wild birds? Yes, No, or N/A.

32. Have you ever been sprayed by a skunk within city limits? Yes or No.

33. Are you afraid of being sprayed by a skunk within city limits? Yes or No.

34. Have you ever hit, injured or killed wildlife with your vehicle (within city limits)? Yes or No.

35. If so, what type of animal? Deer, skunk, rabbit/hare, raccoon, porcupine, badger, mice, ground squirrel, rattlesnake, magpie, crow, gull, other type of mammal, other type of bird, other type of amphibian/reptile.

36. Do you intentionally feed or water wildlife within city limits? Yes or No.

37. Do you have a bird feeder? Yes or No.

38. Should people intentionally feed or water wildlife, excluding birds, within city limits? Yes or No.

39. Should people intentionally feed birds within city limits?

40. Do you secure your garbage/waste to prevent wildlife from feeding on it? Yes or No.

41. Do you have any of the following on your property: compost, fruit trees, other trees or shrubs, grass, woodpile, water source (e.g. pond or fountain), vegetable garden, flower garden, detached garage, shed, deck.

42. Are you a hunter or trapper? Yes or No.

43. Are you a bird watcher? Yes or No.

44. Have you trapped wildlife on your property to relocate it? Yes or No.

45. Have you trapped wildlife on your property of euthanize it? Yes or No.

46. Are you concerned about the safety of your pet, family/household members or self when encountering wildlife within city limits? Yes or No.

47. Are you concerned about the safety of wildlife in human-wildlife interactions? Yes or No.

48. How afraid are you that wildlife might carry and transmit diseases such as rabies? Not at all afraid, a little afraid, moderately afraid, or very afraid.

49. Should wildlife populations within city limits be managed? Yes or No.

50. If yes, how so? Culling/euthanasia, relocating animals, such as rattlesnakes, neutering/spaying/birth control, through the connection of green spaces for movement within city limits, by providing safe animal crossings, and/or by providing veterinary services (for example, if the animal is found injured).

51. Is there anything you would like to add?

APPENDIX E:

DESCRIBING DOG INTERACTION(S) WITH WILDLIFE

Comments from second survey describing dog interaction(s) with wildlife:

> Dog injured raccoon which I had to call animal control to euthanize it which turned out to be rabid.
>
> My dog went after a small rattler in [Peenaquim] Park. Thank goodness it was cool and he was young and surprised or we both would have been bitten! I backed her off and the snake went the other direction.
>
> We get deer in our front yard under the bay window. Our dog goes NUTS when she sees them on the property, and she will lunge against her leash if she sees some while we are out walking. I'm afraid one day we are going to get hurt with an animal that may react aggressively to my dogs behavior. Our neighbor continues to leave cat food outside at night attracting skunks and also raccoons. Dog has been sprayed numerous times by skunk on other side of fence making it difficult to let her out in evening.
>
> They love chasing birds and always try to chase the birds out of the trees in the backyard, the birds don't really pay attention to it!
>
> Rattlesnake bite to dog's nose.
>
> My Dog passed away but living downtown in London Road we had a very smelly skunk interaction & a funny [raccoon] incident, down by Par 3 we had a scary rattlesnake incident, and on the west side we had a scary coyote moment getting out of our car at night. My Dog wasn't bothered by the deer wandering behind our house. She didn't mind the coyotes unless they came too close then she got scared. She didn't mind the Magpies unless they picked on her. Never bothered by crows. Never noticed the garter snake, owl or hawk. Overall it is what it is having a dog and living with wild animals near or on your property. Being careful and responsible kept scary incidents from becoming tragic for the dog. The skunk was mistaken for the neighbour's cat. Lol
>
> Porcupine encounter with dog receiving a few quills. Deer and rabbits in the front yard get the dog stirred up (she is normally on leash when we walk her).
>
> I back onto the coulee. We have numerous interactions. Deer sniffing at the fence with dog. Raccoons steal dogs' toys. My dog has killed numerous voles, mice & shrews that come into our yard.

Our dog, despite being large, doesn't seem to have much of a prey drive, so most experiences have been positive. Wildlife that frequents our neighborhood seem to have a good grasp on which dogs are safe and which are not. I've had a run in with a raccoon that appeared to be more concerned with me than my dog. Despite the raccoon growling and snarling, the dog never attacked. Deer just create a bit of distance (sometimes that distance is just on the other side of the fence) and keep about their business, and the bunnies in our yard, seem to know when we might be out and if we surprise them, they seem to know where to hide temporarily, and return later.

Skunk, sprayed dog, porcupine quilled dog, deer charged me in front yard.

My dog has had interactions with many wildlife species. With deer he will usually bark at them and will try chase (but he has shorter legs and gives up quickly), however deer have chase him in defense of fawns (because he is smaller in size). With coyotes he will alarm bark but is fairly hesitant to chase and mainly wants to keep an eye on them. He has met a number of rattlesnakes and is very curious and will bark at them, but typically doesn’t get super close. He has been mildly quilled by a porcupine and still shows great interest but seems to respect then more. He generally ignores birds and will go after small mammals

APPENDIX F:

COMMENTS DESCRIBING CAT INTERACTION(S) WITH WILDLIFE

Comments from second survey describing cat interaction(s) with wildlife:

Cat killed birds.

He watches birds in the yard but to my knowledge doesn't hunt (doesn't leave our property) and has never brought animals home dead or alive.

They enjoy sitting and watching.

Sniffing noses with a jackrabbit buck while walking my cats on leashes.

She catches mice and likes to watch the birds.

Killed a bird, killed a mouse.

Well [our] cats have mostly eaten the other animals, such as mice, birds and bats. I'm unsure if this would be considered positive or not.

Despite my cat only being outside in a contained “Catio” it has still managed to kill some birds and mice.

We have seen neighborhood cats that are allowed to wander killing birds in our yard.

Cat caught mice.

The interaction was likely coyote or owl. While we were very sad we were having trouble keeping the cat inside and there is no other way to prevent this.

My cat hunts and kills a variety of birds, which I dislike. My cat gets along with skunks, and even chases them without them spaying him.

Caught and killed sparrows and mice.

Catches birds.

Cats has at times killed a bird.

Skunks have sprayed them (not upset about it I’m sure my cats were annoying them by being too friendly) and [deer] which just sniffed them.

We live by the wetlands and she brings home mice and garter snakes.

Mostly positive, but two of our cats have been sprayed by skunks. Think they blundered into each other.

APPENDIX G:

COMMENTS TO OPEN-ENDED QUESTION

A selection of responses to the open-ended question "Is there anything you would like to add?":

> A senior lady in the neighbourhood puts food out for 20+ feel cats which attracts skunks, crows, magpies, seagulls and at least 20 [feral] cats daily! The birds [squawk] at 6-7 am daily! Her address is [omitted].
>
> Years ago [I trapped] sparrows in order to encourage bluebird nesting. This worked in rural areas, but not in town.
>
> Biodiversity is key for supporting birds, other wildlife and insects. Would be nice if garden centers could sell native plants to help support wildlife.
>
> We are developing their space. Rattlesnakes should be relocated away from housing and protected. Deer herds do need a little thinning or relocation to keep it manageable. Places to safely raise their young or move from one area to another without being stuck crossing 6 lanes of traffic. [A local wildlife relocator and rehabilitator's] ability to remove skunks, snakes and raccoons is an excellent thing. That said, I've hit more people's poor cats bolting into traffic then I have wildlife.
>
> We can [coexist]. My two [neighbours] just [live-trapped] 7 skunks and had them relocated. I don't think that is beneficial to them, but I guess it's better than death. Love the deer. Love ALL of God's critters they are all welcome in my yard ❤️.
>
> We've moved into nature, and we have displaced the animals. We need to help now more urban populations of animals/wildlife manage in the new habitat we've created. They can't just go buy new property elsewhere, it's not fair to expect wildlife to relocate to accommodate us, we need to give too.
>
> With all the nasty things that mankind is doing to the planet , it is so good and pleasing to see that wildlife still has a safe haven, with us.
>
> It was difficult to answer question 50. We currently have an issue with a raccoon in our yard. It is smarter than the traps, and so we've been attempting to relocate it, but have been failing so far. Even more frustrating, is my understanding is raccoons aren't native to the area, so in this instance, I'm Ok with euthanasia or sterilization - not to mention they can carry disease that

affects dogs. Our dog has enough health issues without the raccoon introducing more. Otherwise, for those animals which are native, we don't seem to have a lot of issues. The deer population seems to have increased, but at the same time, watching two baby twin deer grow up this summer was fun. We've had other fun incidents with wildlife, including pheasants in our yards, grouse running around behind our fence, giant butterflies, king fisher at a storm pond close to our home, I and get a good laugh at the cotton tail rabbit in our yard. It knows we have a dog, who never seems to see it, so never chases it, but yet it still has a panic attack every time, and then comes back an hour or day later - so I'm guessing if feels safe enough in our yard.

Education for residents on living with wildlife is a key way to help avoid current and future conflict. We have neighbours who let cats roam free and feed deer; however directly informing them about the inappropriateness of these behaviours threatens positive neighbourly relations. I witness failure of dog walkers to pick up their pet's poo in the river valley, a behaviour which can pose risk to wildlife, for example transmitting parasites, as well as water quality. Better, more targeted communication about appropriate behaviours towards wildlife through broader community programs would be welcome.

Wildlife viewing enhances our living spaces so do not want to see them removed completely. Dangerous animals should be controlled/removed, but those less likely to harm humans or their pets or destroy property should be allowed to live near our homes. Although some animals may be an annoyance at times, I believe they also provide an opportunity to learn about them. I especially enjoy the smaller birds that can live in many areas. They harm no one.

Urban wildlife makes Lethbridge a great place to live! It provides a constant reminder of the biodiversity that exists on our planet— and how our lives are linked together!

APPENDIX H:

FROM CURIOSITY TO ADVOCACY