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The Pest We All Live With: Cultural Meaning and the Life and Death of Rats

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Sociology

by

Andrew Hammond McCumber

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August 2021

The Pest We All Live With: Cultural Meaning and the Life and Death of Rats

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By

Andrew Hammond McCumber

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When I entered my PhD program in 2014, I did not yet have a full appreciation for how uncommon and fortunate an opportunity it is to pursue a doctorate in one's lifelong home. During my years as a graduate student at UCSB, I have had the benefit of living close to family and friends I've known known for years while embarking on an intellectual journey that would generate for me an entirely new and equally supportive community of new friends, mentors, and colleagues.

The most crucial of these new colleagues to the success of this project, of course, have been my dissertation committee members. My co-chairs John Foran and David Pellow have been nothing but positive since I first pitched them an unorthodox sociology project centered on rats and rat control. They recognized the potential in that early idea and encouraged me to run with it when I am sure many others might have been more skeptical or even concerned for my academic future. Since then, they have left their stamp on the project with their thoughtful comments on countless drafts over the years. Kum-Kum Bhavnani inspired me to look to the Galápagos islands as a sociological case and gave me the methodological tools and sensibilities I needed to conduct fieldwork. Simonetta Falasca-Zamponi pushed me each step of the way to make my argument that much stronger and the work's theoretical stakes that much clearer. And Peter Alagona helped me write to an interdisciplinary audience while refocusing me, when I needed it, to the big, fundamental questions of what the project was about. In addition to my committee members, I also thank Hannah Wohl for her incredibly generous guidance, feedback, and mentorship.

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ABSTRACT

The Pest We All Live With: Cultural Meaning and the Life and Death of Rats

by

Andrew Hammond McCumber

This dissertation examines the cultural meaning of some of our least-loved nonhuman companions: rats. Scholarship in sociology and other humanities and social sciences disciplines has increasingly sought to treat nonhuman animals as important participants in social processes, rather than superficial window dressing on the periphery of the human social world. I extend this work by examining a specifically antagonistic relationship between humans and animals, namely rat extermination. This topic, I argue, has important lessons to impart regarding social relationships with the nonhuman world and nature, despite being overlooked due to rats' generally negative associations and the unpleasantness of the killing involved in extermination.

My study is primarily based on a multi-sited ethnography featuring participant observation and semi-structured interviews in three locations: the Canadian province of Alberta, Downtown Los Angeles, California, and Ecuador's Galápagos Islands. These three sites represent a typology of landscapes (rural, urban, and island) where the practice of rat control proceeds in varying ways and for varying motivations. In rural places like Alberta, rat control is a measure taken to guard against economic losses by preventing rats from

contaminating agricultural yields and draining the resources of farmers. In urban areas, rats prevent a public health risk as vectors for infectious diseases. Finally, on islands, rats are targeted for eradication for environmental conservation purposes by organizations hoping to protect native species and their habitats.

Beyond these general differences related to their landscapes, each of my specific cases has a particular relationship between the rat control and the social and cultural context within which it occurs. In Alberta, a government program inspects farms near the border with neighboring Saskatchewan to guard its decades-long claim to province-wide "rat-free" status. This program, I find, clarifies Alberta's geographic borders and the boundaries of its collective cultural identity by resonating with broader cultural currents of nativism and opposition to outside influence. Los Angeles's Civic Center, meanwhile, had a widely reported rat infestation in 2019, prompting a multi-pronged government response. I find that LA's rat issues are inseparable in the public imagination from the city's homeless crisis, which was specifically cited as a cause of the infestation. The attempts to simultaneously address both these issues attempt to secure public faith in the notion of a clean separation between "inside" and "outside." Finally, rats are one of many invasive species targeted by a group of NGOs in the Galápagos Islands, in programs aimed at preventing the extinction of native species. These programs raise deep ethical questions around what interventions are morally justified for the goals of environmental stewardship.

With these three separate empirical investigations, I advance two overarching arguments: First, rat control is a social practice that draws and clarifies the boundaries of nature and society, and second, rat control enforces an implicit hierarchy of living things that mirrors and is entangled with social inequalities. Together, these findings demand that

we extend the lessons of environmental justice, the notion that the burden of environmental problems fall disproportionately on already marginalized populations, to the cultural imaginations of nature and environmentalism itself.

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You think: That one's too clever*,*
she's dangerous, because
I don't stick around to be slaughtered
and you think I'm ugly too
despite my fur and pretty teeth
and my six nipples and snake tail.
All I want is love, you stupid
humanist. See if you can.
-Margaret Atwood, "Rat Song"

Okay, everybody tuck your pants into your socks.
-Moe Szyslak, *The Simpsons* (in response to a torrent of rats entering his bar)

Chapter One

Introduction

In the Fall of 2016, in the depths of an unrelated Google image search, I stumbled across a map created by an online retailer of pest control products called Do My Own Pest Control. The map purported to display the "Global Rat Distribution," and was color coded in a binary red-and-blue scheme representing areas where rats live and areas where they do not. The earth's landmass, as depicted in this Robinson projection, is nearly universally cherry red, indicating a world thoroughly conquered by these small murine creatures. The only exceptions were the polar regions beyond the Antarctic and Arctic Circles and a curious blue puzzle piece within the vast red expanse of North America that would send me down the intellectual journey covered by this dissertation. The mostly rectilinear boundaries of this blue, rat-free shape were those of the Canadian province of Alberta. Alberta, I soon learned, had a long-standing government program dedicated to ensuring that the territory within that blue puzzle piece remained free of rats.

As a trained social scientist, of course, I knew to take the geographic pronouncements of a map produced by a company hawking ant spray and poison bait pellets

as something less than the result of a rigorous scientific study. On the other hand, as a sociologist studying cultural meaning, I was instantly fascinated by the narrative this map told of a rat-free Canadian province and its stark borders separating it from the domain of rats. Later, to conduct fieldwork and collect data analyzed below, I road-tripped to Alberta from my home in Santa Barbara, California. In that long drive spread across several days, I frequently thought about the distance I was traversing as I approached the blue puzzle piece on that map. All of it – the California coast, the Cascade Mountains, the tan, monochromatic expanse of eastern Washington – was supposedly rat territory. Eventually, after several scenic hours twisting and turning through the Canadian Rockies, I reached the Great Continental Divide, which provides the only one of Alberta's boundaries that is not a line of longitude or latitude. As I approached the sign welcoming me to Alberta, I recall scanning the sides of the road, as if I might see some sort of evidence of the province's rat-free distinction like a population of rodents gathered at the border, kept on the BC side by some invisible force field.

As it turns out of course, there is no rat-proof fence along the border. Nor, to the dismay of one colleague who humorously suggested it, is there a fiery moat of gasoline lining the 110th meridian west, which forms Alberta's border with Saskatchewan to the east. Nevertheless, I found that the practice of rat control itself is deeply connected to boundaries, both spatial and symbolic. In what follows, I explore how managing the life and death of rats brings order and clarity to these meaningful distinctions and what cultural implications this work has.

In a broad sense, this is a story about our human social relationships to nonhuman others. Both in spite of the generally negative feelings many people harbor for them and also because of them, rats are perfect protagonists for an exploration of these human-nonhuman

relationships. Early on in this project, I learned that everyone, it seems, has a rat story. I have heard about rats who nested inside a car engine, adding an unpleasant wrinkle to one colleague's daily commute from their home on a mountain road. Another friend, who returned from two months away from home to find a "toilet rat" that swam up through his sewage pipes, told me he lowered the lid, flushed, and went out for the night, unable to bear checking whether he had succeeded in disposing of the corpse. (He had). A fellow sociologist had a peaceful retreat with their spouse spoiled when a particularly brazen rat scurried across the floor of their vacation rental, forestalling a peaceful night's sleep until they were sure they had removed it. Most amusingly, perhaps, I heard of an eccentric uncle who kept a BB gun by his bathtub, in case the chance arose for him to hunt the rodents while taking a soak.

Two important things about rats are highlighted by these informal, anecdotal data. First, rats are uniquely intertwined in the social fabric of human life. As the Do My Own Pest Control map described above insists, rats live nearly everywhere in the world. Moreover, they thrive perhaps nowhere more than in our shadows, readily taking advantage of the food sources and warm environments created by human social life. Second, the emotional responses are that our encounters with these animals elicit tend to have a negative valence. After all, with some help from Charles Schutz's Peanuts comic strip, "rats!" became a common exclamation of disgust or disappointment sometime in the middle of the twentieth century. As I will return to at times, rats are not universally reviled, as some like to keep them as pets (in the interest of full disclosure, I myself even had pet rats as a child, partially because of the restrictions on dogs and cats in the rental properties in which my family lived). Nonetheless, rats are most often met with some combination of revulsion and animus.

These two observations will serve as a jumping-off point to examine the cultural meaning of our explicitly violent and antagonistic relationships with nonhuman others. Though some multispecies scholars have explored these more contentious interspecies relationships (Timothy Pachirat's 2011 ethnography of industrial slaughterhouses being a prime example), they remain undertheorized compared to other genres of human-animal relationships characterized chiefly by affection, symbiosis, or harmony. We stand to gain a much more detailed account of the sociological importance of nonhumans by turning to relationships like those between humans and rats. Specifically, what are the social and cultural implications of the instances where human populations have endeavored to systematically exterminate another species? This dissertation will examine this question in a multi-sited study of rat extermination, eradication, and control. It will draw primarily from ethnographic, interview, and textual data on three locations: Alberta, Canada; the Galápagos Islands of Ecuador; and Los Angeles, California. As already noted, the rural province of Alberta has claimed to be "rat-free" for decades on the strength of its government rat control program that monitors the border with Saskatchewan for rats. In Los Angeles, a recent rat infestation in city hall sparked public outcry that metastasized into a symbolic referendum on nearby homeless encampments. Finally, in the Galápagos, rats are among the "invasive species" that environmental conservation groups attempt to eradicate in order to protect native species habitats.

Through analysis of these three case studies, I advance two overarching arguments about the broader phenomenon of rat control and the cultural lessons it offers:

First, rat control is a social practice that draws and clarifies the boundaries of nature and society. On the surface, rat extermination is a project with a wide range of possible motivations. The stated rationale for the rat program in Alberta is an economic one,

for instance, where keeping the province free of rats is seen as guarding against lost agricultural production. Elsewhere, rat control is a public health initiative concerned with preventing the spread of infectious diseases (LA) or part of an environmental conservation effort (Galápagos). Whatever their official intentions may be, however, these various rat extermination projects are all efforts to lend clarity to the spatial and symbolic boundaries between nature and society. In other words, by controlling the lives and movements of rats, these organizations manage the acceptable terms of our human coexistence with the nonhuman world: Albertan Pest Control Officers enforce the appropriate environmental conditions that make for good, dignified farming, the LA city government guards public faith in the threshold between "inside" and "outside," and conservationists in the Galápagos work to prevent pristine wilderness from being defiled by human influence. Rats demand such nature/society boundary work because their existence defies this taken-for-granted distinction. They are non-human animals but are nonetheless far from charismatic wildlife. They bring the nonhuman world to our doorsteps, thriving along the margins of our population centers always in close proximity to us, despite how much we may desire to cast them off to the hinterlands.

Second, rat control enforces an implicit hierarchy of living things that mirrors and is entangled with social inequalities. Rat control programs reveal how, at its core, the work of managing the boundaries between human society and nature means adjudicating the right to life itself. Rats, I find, lie near the bottom of a symbolic hierarchy of species which extends from human life at the top, cherished beings like companion animals and majestic wildlife just below us, on down to the irksome pests and "invasive species" that call for systematic extermination. In this project's cases, this hierarchy mirrors specifically human systems of inequality and becomes enmeshed with them. Rats come to act as symbolic proxies for

unwanted immigration in Alberta. The "rat problem" in LA's city hall becomes connected to and even indistinguishable from the contentious politics of homeless policy. Local populations and NGOs clash over who has the legitimate right to affect environmental change and for what purposes on the Galápagos Islands.

Together, these findings demand that we extend the lessons of environmental justice, the notion that the burden of environmental problems fall disproportionately on already marginalized populations, to the cultural imaginations of nature and environmentalism itself. Managing our relationships with the nonhuman world, rat control shows us, is inherently an expression of power. Charting a just and sustainable future, therefore, will require that we reckon with the often-uncomfortable question of what place the rats of the world will have in the worlds we envision.

A Sociology of Rats and Extermination

This is a dissertation about rats and it is also a dissertation about extermination. That much may be obvious by this point, but it bears being explicit about the intention behind organizing the project around these two themes. There is much that is sociologically interesting about rats that does not relate specifically to projects of rat extermination. It is not difficult to imagine a fascinating project within this broader "sociology of rats" that never leaves the confines of New York City's subway system, with its famously large population of murine denizens who occasionally become viral internet characters for snatching magnificently large slices of pizza. Likewise, one might write a whole dissertation on extermination without paying any unique attention to rats compared to the many other beings that humans target with warfarin pellets, firearms, and other tools of lethal force. All this is to say, by choosing these two organizing principles I am not attempting to tell the entire sociological story of human-rat relationships *on top of* the entire story of

extermination. Rather, I choose these themes because I believe that we learn something unique and important about the cultural meaning of our relationships with nonhuman animals by considering them together.

Far from two ultimately arbitrary topics, rats and extermination are the mutual epitomes of each other. On the one hand, the most salient emotional responses we tend to associate with rats are those of fear, revulsion, and dislike. Occasionally rats, real of fictional, capture the hearts of the masses (such as the "pizza rat" alluded to above or Remy the rat chef in the Pixar film Ratatouille), but these instances seem to occur *in spite of* rats' more common associations, as exceptions that prove the rule. On the whole, in the western world, we have less affinity for rats than perhaps any other mammalian species, and accordingly we are uniquely willing to kill them.[1] Some, of course, enjoy keeping rats as pets, but the comparative scope of this practice is dwarfed by that of the industrial project of rat extermination. On the other hand, we exterminate lots and lots of things, and have done so in various places around the world for centuries. Rats, however, are the animals most like us that we exterminate on such a large scale. Rat extermination is the variety of this animal relationship where we are most compelled to contend with the killing that is so obviously front and center.

By examining rats and extermination together, this dissertation extends the body of literature within sociology that has treated nonhuman animals as something more than just window dressing adorning the periphery of the analytically significant social world. In many ways, the sociology of animals has evolved from the intellectual tradition of environmental sociology, which similarly had to disabuse the broader discipline of the notion that the

[1] We of course kill lots of animals on a mass scale for food, but few would say this killing is motivated by anywhere near the animosity that characterizes the human-rat relationship.

human social world can be analyzed as self-contained. Early environmental sociologists charged that sociology had ignored the biophysical world to its own detriment by assuming that, as Durkheim insisted, social facts could be explained only by other social facts (Catton and Dunlap 1978, 1980). They argued that bringing in the physical environment as a legitimate explanatory factor for social phenomenon amounted to a Kuhnian (1962) "paradigm shift." Early sociologists of human-animal relationships, meanwhile, sought to expand the epistemological boundaries of the discipline similarly by extending personhood to animals and putting them on equal footing with humans as agentic participants in social processes (Irvine 2008; Sanders 2010; Sanders and Arluke 1993).

These efforts have certainly not been without controversy. In a 1993 article in *The Sociological Quarterly,* Clinton Sanders and Arnold Arluke use feminist standpoint theory to argue that humans can legitimately parse the perspectives of animals in their proximity as "nonverbal others" (Sanders and Arluke 1993). In a response to this piece, Richard Hilbert points out that this notion would seem to imply that women's contributions were superfluous to the development of feminist theory, since men could intuit their perspectives by virtue of their proximity (1994). Another shortcoming of many sociological treatments of nonhuman animals, and one which this dissertation's focus on rats and extermination addresses, is that they focus on a fairly narrow genre of human-animal relationships, giving most of their attention to companion animals and other mostly harmonious interspecies interactions. Much of Arluke's work does examine animal abuse, but even this topic assumes the normative relationship between humans and animals is a peaceful one. Some recent work has bucked this trend, including Colin Jerolmack's excellent ethnography *The Global Pigeon,* which explicitly focuses on an animal widely seen as an urban pest (2013). A large

part of Jerolmack's book, however, focuses on pigeon keepers, who relate to the birds not as pests but as the objects of animal husbandry.

Jerolmack insightfully notes that the extent to which animals are incorporated into the fabric of human social activity depends on their ability to perform "socially appropriate roles." At face value, many would interpret this to mean that the animals we like, those that provide companionship or signify a normatively "good" nature are the ones that become sociologically significant. This dissertation implores us to consider the notion that when we systematically exterminate another species, we do it not because that species serves no "socially appropriate role," but that extermination is instead evidence of a different, equally important role that that animal plays in our meaning systems. The rats of the world and our attempts to do away with them demand that we shift our focus to the "bad" kinds of nature that order our experiences with the biophysical world.

In general, I take an analytical approach that examines animals and our relationship to them in terms of cultural meaning, in the Geertzian (1973) sense of mutually shared significance. More specifically, I examine how animals like rats function as "cultural" objects, or "shared significance embodied in form" (Griswold 1986). The alignment between material form and cultural meaning is a fickle one; objects like artwork (Domínguez Rubio 2014, 2016, 2020) or the billboards and ribbons of awareness campaigns (McDonnell 2010, 2016) are constantly at risk of being rendered incapable of performing their symbolic duties by the physical stresses of time and the natural elements. This lesson is important for understanding the significance of animals as well. Animals are routinely invested with potent symbolic meaning, as observed by scholars like Durkheim (1912) and Claude Lévi-Strauss (1963) in their analyses of "totemism," but, given their sentience and mobility, they have constantly evolving relationships with humans. As such, this dissertation examines

how rat control is a practice of managing both the material existence of rats, but also the symbolic cultural meaning of rats themselves.

Research Design and Analytical Approach

This dissertation empirically investigates three separate programs of rat control, eradication, and extermination in three very different geographic locales. Methodologically speaking, the backbone of my study is a multi-sited ethnography drawing on distinct fieldwork and data collection for Alberta, Canada, Los Angeles, California, and the Galápagos Islands. This unique approach is designed to capture the through lines and variations that characterize a common, widespread social practice (rat control) as observed in very different contexts.

Typically, ethnographic research produces in-depth, interpretive accounts of how meaning is produced within communities, social groups, or social phenomena in a single geographic locale. Within the universe of sociological methods that includes less intimate but far more wide-reaching approaches like national surveys, this is typically seen as a trade-off where generalizability is sacrificed for interpretive richness. Increasingly, however, researchers are finding this conceptualization of ethnography to be inadequate for describing the complexities of an interconnected, globalized social world (Burawoy et al. 2000). Multi-sited ethnography offers a qualitatively different approach to ethnographic research, one that attends to both the specificity of individual cases and the generality of social processes that transcend them. As Carney (2017) describes it, the advantage of multi-sited ethnography "lies in the ability to examine the interplay between micro and macro social processes."

Importantly for this project, multi-sited ethnography is not aimed at simply facilitating comparisons, though similarities and differences between sites do naturally become part of the analysis. Nor is its goal to simply add research subjects for the sake of

generalizability, the way a quantitative scholar may increase their n-value and stratify their sample by demographic criteria. As described by George Marcus, a progenitor of these approaches, in the course of conducting a multi-sited ethnography, "de facto comparative dimensions develop … as a function of the fractured, discontinuous plane of movement and discovery among sites as one maps an object of study and needs to posit logics of relationship, translation, and association among these sites" (1995:102). In terms of this dissertation, then, I analyze each of my three cases separately, but to the end of examining the phenomenon of rat control itself as the common, overarching object of study.

Multi-sited ethnography is a particularly good fit for this topic because rat control proceeds for a variety of different reasons and with a variety of different practical implementations. Exploring these different contexts allows me to examine how rat control is at once a common, widespread phenomenon indicative of widely salient cultural meaning surrounding human-animal relationships and also a practice wherein communities and actors make meaning on a smaller, more local level. Importantly, this lends my project not just a sensitivity to divergent cultural contexts, but a geographic sensitivity to space and place as well. To that end, my three sites are selected to represent a typology of different landscapes where rat control takes place: rural, urban, and island landscapes.

These different landscapes shape both the possibilities for rat control and the motivations for undertaking it. In rural landscapes, rat control is motivated primarily by economic calculus. Rats themselves are imagined as threats to agricultural revenue, as pests that contaminate crop yields, sap farmers' energy, and leech off their supplies. In this context, rat control is an ongoing practice, but low population density makes maintaining large swathes of (at least mostly) rat-free territory possible. In urban areas, on the other hand, few engaged in rat control have any illusions of completely eradicating the rodents

and cleansing their cities of them entirely. Instead, the goal of rat control is to protect public health by managing the spread of infectious diseases that rats transmit. This means containing rats to specific urban geographies and guarding the ultimately porous threshold between the interior and exterior of buildings. Finally, in island locations, rats are threats to cultural ideas of nature themselves, as they prey on native species or damage their habitats. Conservationists work to remove rats, which typically were introduced at one point or another by humans in the course of travel, from island ecosystems. The relative isolation of many islands contributes to motivating this goal, as islands represent self-contained landscapes that resonate with widespread understandings of nature as fundamentally external to and sequestered from the world of human affairs. This same isolation also makes islands unique compared to the other contexts of rat control in that it presents the rare opportunity to completely eradicate a population of rats and prevent their reintroduction.

My specific sites are described in detail below. While the foundation of this dissertation is the multi-sited ethnography built on in-depth interviews and observational ride-alongs with practitioners involved in each rat control project, I supplemented these data with various other sources to get a fuller picture of the relevant cultural meaning surrounding each locale. This meant deploying several different approaches from my methodological toolbox, ranging from archival historical methods to quantitative analysis of existing survey data to computational text analysis based on the tools of Natural Language Processing. I will provide more detailed methodological accounting for these supplemental approaches during the chapters where they are used.

Research Sites

I made field visits to each of my three sites and interviewed practitioners and officials involved with the project of rat control, in order to uncover the cultural meaning of

human-rat relationships. My approach centers on organizations directly responsible for the rat control efforts in question, which allows me to examine both their strategies for the work they do and also how they conceptualize that work in relation to the broader social context where they operate.

Alberta

In Alberta, my participants were government officials for the provincial rat control program. Alberta, a province in western Canada, is split between the Canadian Rockies in the west, boreal forest in the north, and prairie in the east. Beginning in the 1950s, the province began a campaign to remove rats from the province and prevent them from returning. This involved stopping rats' westward advancement across the prairie towards population centers like Calgary, the province's largest city. That government program continues to operate, conducting twice-yearly inspections of homes and farms along the border with Saskatchewan, as well as operating a province-wide hotline (310-RATS) that residents can call to report suspected sightings of rats.

The maintenance of a rat-free Alberta is more than just the protection of an eccentric and rather arbitrary claim to fame. In the early years of the rat program, the government launched an information campaign that included propaganda posters depicting rats as an invading army encroaching on Alberta and imploring the populace to contribute to killing them. This campaign was necessary in part because most residents in the southeast of the province, the battleground area in the campaign against rats, had never actually seen one and struggled to distinguish them from other, similar rodents (a phenomenon which persists to this day and continues to pose problems for Alberta's rat control personnel). Despite this difficulty of identifying the animals, the program has not just succeeded in physically keeping rats at bay, but it has also made them into a symbolic villain in Albertan cultural life

and given the province a collective point of pride that is part of its regional identity. Moreover, the cultural identity of the rat as a nefarious outsider resonates with a broader cultural current of oppositional identification in Alberta, a province that has long had a contentious relationship with the rest of Canada and strives to assert its own independence and distinction.

To examine the role that this government rat control program plays in Alberta's cultural identity, I conducted an ethnographic ride-along during its inspections along the Saskatchewan border and interviewed the regional "Pest Control Officers" who conduct them. I also conducted interviews with Alberta's provincial rat and pest specialist, the head of this program, as well as a convenience sample of Calgary residents in order to gauge public awareness of and opinions regarding the rat control effort. To supplement these ethnographic and interview data, I collected archival historical materials related to the program's early years from the Provincial Archives of Alberta, located in the capital city of Edmonton. These materials included photographs, newspaper clippings, and yearly reports compiled by the province's Department of Agriculture, which housed the program in its early years. Finally, I also conducted a statistical analysis of survey data to corroborate themes observed elsewhere in my qualitative analysis. These survey data were compiled by the research firm Environics and concerns Canadian public opinions about immigration. I used these data to document one manifestation of Alberta's cultural tendency to define its collective identity in opposition to outsiders and outside influence.

Los Angeles

In Los Angeles, I interviewed a variety of city employees and contractors involved in the official response to a highly publicized 2019 rat infestation of the Civic Center, the large complex of office buildings that is home to LA City Hall. This infestation, which was

reported in the *Los Angeles Times,* coincided with an outbreak of typhus in downtown Los Angeles and created a public health crisis for the city and public relations problems for the local government. One city employee who contracted typhus sued the city, claiming that their infection was the result of dangerous working conditions posed by the rat-infested Civic Center.

Months after the initial coverage of the infestation, the *Los Angeles Times* ran a follow up story that reported on the previously undisclosed assessment of a pest control company contracted by the city to inspect the area. The company's findings explicitly linked the rat problem to homeless encampments surrounding the office buildings. Specifically, they claimed that these encampments created conditions that invited rat infestation, which included discarded food scraps and human waste on sidewalks and in planters. With this connection, rats took on a symbolic importance in city affairs by embodying several contentious and related public issues, including the spread of infectious disease and the LA's longstanding and fraught struggles with housing security and homelessness. Homeless encampments of the sort more common in nearby Skid Row had become and increasing presence around the Civic Center, and when the reports of infestation began, the "rat problem" became for all intents and purposes inseparable from the contentious politics of homelessness policy. The city instituted several measures to address the rat infestation, many of which necessarily bled over into the policy domain of homelessness. All attempted to protect public confidence in the boundary between "inside" and "outside" that both rats and homelessness transgress in parallel ways.

Compared to my other sites, the problem of rat control in downtown LA is uniquely difficult to contain in a discrete organizational project, and instead overlaps with myriad social problems and areas of bureaucratic jurisdiction. While the city maintains a contract

with a private pest control company that conducts inspections around the Civic Center, keeping rats at bay necessarily involves other organizational bodies, including the Departments of General Services (GSD) and Personnel, the Department of Sanitation, Parks and Recreation, and the LAPD, among others. I interviewed employees from GSD, Sanitation, the office of an LA City Councilor, and the private pest control company contracted by the city. I also conducted participant observation with the Sanitation department, which conducts weekly cleanings of the civic center that were instituted in response to the rat infestation. Lastly, I also analyzed transcripts of the three City Council meetings from early 2019 whose agendas included discussions of the rat control issue as well as of local news coverage of the issue from that period.

Galápagos

In the Galápagos Islands, rats are just one of the species targeted for eradication by conservation initiatives hoping to protect native species and their habitats. In the early 2000s, it was goats who occupied conservation groups' energies, as a collaboration of the Galápagos National Park and various NGOS attempted to completely remove them from the island of Isabela. This project was controversial for the extreme methods it employed, which involved sharp shooters exterminating the animals with high powered rifles and hormone treatments designed to make the goats more social and thus easier to dispatch with in higher numbers at once. Such methods exemplify the lengths to which conservationists will go to return the island landscape to a particular physical and ecological state. The eradication of rats that brought me to the Galápagos is extreme in another way: it is the first program on an island with the complicating factor of a significant permanent human population.

While these programs are invested in protecting nature, they simultaneously contribute to defining both ideas and experiences of nature itself. The Galápagos Islands are

iconic for the wildlife that they are home to, in no small part because of their mythologized role in inspiring Charles Darwin's theory of evolution. As I will examine in detail, native species of the Galápagos, especially the Galápagos tortoise, symbolize nature more thoroughly than perhaps any other wildlife because they have become synonymous with the process of evolution, emblems of the very laws of nature themselves. This introduces a contradiction that frames modern conservation attempts: nature is iconic for representing processes of change, but protecting nature often amounts to preventing change. Put another way, conservationists hope to undo the "unnatural" influence of humans and human-introduced species like rats in order to return the landscape to a preferable state. This begs the question of who or what can be a legitimate agent of environmental change, and what is the appropriate role of humans in revered natural landscapes?

To investigate these tensions, I interviewed employees of the NGO Island Conservation, which partners with the Galápagos National Park and other conservation groups on species eradication programs for conservation goals. Interviewees included conservation biologists, wildlife ecologists, environmental lawyers, and project managers, among others. I travelled to Floreana Island to visit the site of the current eradication program, where team members were preparing for "implementation," or the beginning of the poisoning program, which was then two years away. A major part of this preparation is the construction of chicken coops and other structures to house livestock during the poisoning program, as well as aviaries, which will house entire populations of native bird species to ensure they are not unintentionally poisoned. I toured these construction projects and spoke with the local population working on them. In addition to this field visit and the interviews conducted in the Galápagos Islands, I also interviewed an Island Conservation employee based in the US who helps to coordinate Project Floreana from afar, as well as a

conservation biologist and professor emeritus who pioneered methodologies employed by the organization. I supplement my interview and ethnographic data with planning documents obtained from the Galápagos Conservancy, one of the organizations involved in these programs, which pertain to specific eradication projects. These data offer important insights as they represent direct articulations of the programs' goals, methodologies, and justifications in the practitioners' own words. Finally, I also collected a sample of over 1,000 blog posts from the websites of the various conservation organizations involved in the eradication. I use a combination of Natural Language Processing techniques and qualitative coding to examine the text of these blogs and produce a picture of how conservationist organizations imagine the natural ecosystems they seek to protect.

Table 1.1 contains a list of interviewees organized by research site.

Table 1.1. Interviewees by research site.

Interviewee	Description	Notes
Alberta		
Phil	Provincial Rat Specialist	Interviewed three times
Jesse	Pest Control Officer	
Dave	Pest Control Officer	
Amanda	Calgary resident	
Brenda	Calgary resident	
Amber	Calgary resident	
Scott	310-RATS caller	
Gerald	Calgary resident	
James	Calgary resident	
Pattie	Calgary resident	
Linda	Calgary resident	
Los Angeles		
Deborah	Department of General Services	
Mas	Department of Sanitation	Interviewed twice
Pattie	Department of Sanitation	
Ryan	Pest control contractor	
Miles	Sanitation crew	

Miguel	Sanitation crew	
Chad	Sanitation crew	
Jose	Sanitation crew	
Drew	City councilor staffer	
Galápagos		
Brian	Conservation Biologist	
Carmen	Island Conservation	
Kevin	Island Conservation	
Florencio	Island Conservation	
Chris	Island Conservation	
Jorge	Island Conservation	
Peter	Tourist	
James	Tourist	
Carl	Tourist	
Bettie	Tourist	
Rolph	Tourist	

Plan of the Dissertation

The next three chapters will each focus on one of the three field sites in my study. Each of them explores separate empirical questions and each advances its own theoretical argument or concept.

Chapter Two explores the case of Alberta's longstanding rat control program and asks the question: why is being "rat-free" so important in Alberta and what does "the rat" mean to Albertans as a cultural object? I introduce this case study by giving an overview of the history of the province's program and of Alberta's tendency to define its collective identity explicitly in opposition to outside forces. By analyzing ethnographic data from participant observation with Pest Control Officers on the Alberta prairie, I show how rat control gives salience to Alberta's physical, geographic borders by adding a distinguishing element (the quality of being "rat-free") to an otherwise indistinguishable landscape. Far from an arbitrary claim to fame, though, Alberta's "rat-free" status is a narrative of moral

accomplishment tied to the cultural meaning of the rat itself as a symbolic villain, as evidenced by archival data. More broadly, I argue that nonhuman animals participate in boundary work, the mechanisms by which people imagine and negotiate the limits of social categories and intuitively understand the lines between "us" and "them," in unique ways. Human-animal interactions are uniquely important to the negotiation of group identity and its boundaries because, as both cultural objects and elements of the broader biophysical landscape, our relationships with animals are both spatial and symbolic in nature. As such, paying attention to the role of human-animal relationships provides important insight into how group identity and the limits of group membership are achieved through an interrelated negotiation of spatial, geographic borders and symbolic, discursive ones.

Furthermore, I compare the construction of the rat as an external menace that must be controlled to potent currents of anti-immigrant sentiments in Alberta. The pride that Alberta takes in its rat-free status begs the question of what else Alberta's notion of collective identification is invested in keeping out. I argue that this rat control program is one element of an overarching project of border policing that continually defines the limits of Albertan collective identity. As a cultural narrative, rat control is premised on a moral hierarchy of species that it continually reinforces. Many of the abovementioned posters, for instance, were commissioned by Division of Entomology in Alberta's Public Health Department, discursively lowering rats to the status of insects. As a process of meaning-making, this contributes to the essential moral logic of insider-outsider relationships in the province more generally, which broadly govern who or what is included in the category of "Albertan.

Chapter three shifts to downtown Los Angeles, and in particular the case of the Civic Center's 2019 rat infestation in order to theorize the capacity of rats to function as what I

call “spatial metonyms” in urban environments, or physical entities who carry such potent symbolic meaning that they order our social experiences of urban space. Few people would be surprised to learn that downtown LA has a significant rat population, but nonetheless the narrative of rats penetrating the walls of City Council’s chambers or the Office of the Mayor is uniquely evocative. By trespassing them, rats clarify the spatial logics of cities, including and especially the very basic notion of the threshold between “inside” and “outside.” In the process, they become synonymous with disease, dirtiness, and all of the “bad” kinds of nature from which urbanites tend to intuitively feel that cities incubate them. Keeping rats out of the equally symbolic grounds of city hall is a crucial exercise in maintaining this overarching sense of security that these taken-for-granted ontological boundaries confer.

Moreover, I examine how the public issue of this rat infestation bled into other arenas of the contentious politics of urban space in LA. Specifically, in the months after the infestation the *LA Times* reported that the private pest control company contracted by the city directly tied the rat infestation to these homeless encampments in its official report on the issue. Much of the city’s response to the rat issue in the Civic Center has either implicitly or explicitly involved the homeless, and discussions of the “rat problem” in my interviews consistently veered towards the topic of the “homeless problem” to the point where the two became nearly inseparable and at times even indistinguishable. Whereas rats entering city hall represent an unacceptable breach of the “inside” by the “outside,” the homeless encampments around the civic center, and, importantly, the storage of “bulky” personal belongings in public space represent an inverse of that transgression, where elements of the “inside” inappropriately reside “outside.” The reciprocal spatial transgressions of rats and homelessness come to be symbolically tethered to each other as inseparable public issues. Moreover, through discourses of public health (concern over rat-

borne diseases like typhus, and later over COVID-19), the spatial logic that is maintained through the interconnected projects of rat control and homeless policy becomes a moral prerogative.

Chapter four centers on species eradication programs in the Galápagos Islands. By examining the massive undertaking of completely removing a species from an island I ask the following question: how do conservationists understand human influence as simultaneously an inherent threat to nature and a necessary tool for saving it? I provide an overview of species eradication in the Galápagos Islands, and examine how, in the course of their work, its proponents must develop working conceptions of acceptable environmental change. This occurs through a series of valuations of individual animals – those like rats who are targeted for extermination, and those like giant tortoises who conservationists' efforts are aimed at protecting. I use species eradication and this negotiation of acceptable environmental change as a case study to theorize the relationship between individual animal species and more holistic cultural ideas of "nature." I describe this relationship in terms of what I refer to as the "ecology of meaning," or the dynamic relationship between cultural objects and broader salient discourses that constitute our popular understandings of the nonhuman world. Here I build on the theoretical ground covered in chapters two and three, extending their scope to examine how the spatial and symbolic relationships we maintain with animals inform our overarching dispositions to the natural world. The concept of "ecologies of meaning" allows us to see both how elements of ecologies, like individual species of animals, become salient cultural objects whose meaning generates broader ideas of "nature" and how both of those are grounded in a constant negotiation of the material conditions of human-nonhuman interactions.

Moreover, the cultural meaning that guides this conservation work is morally inflected and species eradication is necessarily a question of life or death. When is lethal force, whether by rifle or by poison, an appropriate tool in environmental stewardship? Chapter four explores how, in negotiating these inherently contradictory questions, conservationists implicitly tread into broader ethical terrain around what bodies (animal or otherwise) are dispensable or worth protecting. By turning to species eradication programs in the Galápagos, and specifically to conservationists' articulations of those programs and their goals, we can see a spatialized meaning making process where these moral issues get sorted out in material ways. The current project in the Galápagos, on Floreana Island, throws these contradictions of eradication work into especially stark relief because it is the first program of its size on an island with a permanent human population. As my interviewees told me, the program's initial plan was to remove the human population on Floreana Island for the duration of the poisoning phase, a proposal to which the community fiercely objected. Since this early phase, Island Conservation and its partners have worked much more cooperatively with the Floreana locals, but this initial impulse demonstrates how the moral cosmology within which species eradication proceeds extends far beyond just the animal species on the islands. Ultimately, this case shows how ideas of nature construct a moral order that dictates an acceptable distribution of bodies in space.

Finally, the chapter five concludes by discussing the takeaways from the empirical findings from each site. It returns to the two overarching arguments outlined above to detail how each chapter's data support them.

Chapter Two

Rats and "Boundary Work" on the Canadian Prairie

Spring was late in arriving on a cold March morning in Eastern Alberta, roughly 20 miles from the Saskatchewan border. In general, I regard Alberta's claim to "rat-free" status as a remarkable feat, but when I looked out onto the frozen prairie, where it was difficult to tell where snow ended and overcast sky began, it was hard for a Southern Californian like me to imagine the environment being hospitable to much at all, even the famously hardy and adaptive rodents. I arrived there the previous night with Phil Merrill, Alberta's provincial rat and pest specialist, and that day we were to meet Jesse, the Pest Control Officer (PCO) for this area, who is in charge of ensuring that the strip of land here along the border is free of rats.

Alberta is over 255,000 square miles, a little over 1.5 times the size of California, but this area is by far the biggest area of concern for the rat control team. Occasionally, Merrill tells me, he and his team must deal with a single rat that hitches a ride on a truck or RV into Calgary or another population center in the middle of the province, but those rats seldom, if ever, turn into infestations. The cold, alpine conditions in the Canadian Rockies along Alberta's western border with British Columbia, and the sparsely populated and well-managed prairie of Montana to the south are poor conditions for rats, as is the frigid far-north of the province where it gives way to Canada's Northwest Territories. It is this troublesome border, the invisible line through the prairie that separates Alberta from Saskatchewan, that occupies Merrill's energies. On both sides of this line there are grain and cattle farmers whose properties may contain the warm environment and sources of food that rat populations need to get established. Should that happen on the Saskatchewan side, it

takes the vigilance of Merrill and his team to ensure the animals do not spread into neighboring farms across the border. Each Municipal District in the area near the border, deemed the “Rat Control Zone” (RCZ), has a designated PCO in charge of conducting these inspections and taking preventative measures against infestations.

In this chapter, I explore this rat control effort on the Alberta prairie in order to advance our understanding of group identity and its boundaries, specifically by demonstrating the role of human-animal relationships in their constitution and maintenance. While Alberta is far from the only place in the world where rats are met with some combination of revulsion, animus, and targeted lethal force, the province’s rat control program is unique for both its scope and the public investment it has required. I investigate the cultural significance of this rat control effort and Alberta’s claim to “rat-free” status and theorize the relationship between that significance and notions of collective Albertan identity. I do so in an interpretive analysis focused primarily on ethnographic participant observation conducted with Pest Control Officers in the RCZ.

I argue that Alberta’s rat control program functions as an important cultural narrative in the broader project of “boundary work” through which the definition of Albertan identity is continually negotiated. Rat control gives salience to the physical, geographic borders of the province by adding a distinguishing element (the quality of being “rat-free”) to an otherwise indistinguishable landscape. Far from an arbitrary claim to fame, though, Alberta’s “rat-free” status is a narrative of moral accomplishment tied to the cultural meaning of the rat itself as a symbolic villain. This makes rat control a particularly resonant practice in Alberta, where collective identification has historically been potently oppositional in character.

Rat Control and "Boundary Work"

My analysis in this chapter follows the work of others who have applied the perspective of culture as shared meaning to human-animal relationships. Robert Darnton (1984) brought Geertzian thick description to bear on the bizarre slaughter of several cats in 1700s France, reconstructing the layers of social context that gave it meaning. Geertz (1973) himself famously demonstrated how cockfighting symbolically reflected and consolidated the structure of Balinese society. More recent scholars have increasingly incorporated animals as important players in social processes. The early wave of this scholarship in sociology focused especially on companion animals and worked to challenge notions that "selfhood" is uniquely human, demonstrating how our relationships with animals are social in nature (Irvine 2008; Sanders 2010; Sanders and Arluke 1993). Since then, sociological scholarship has drawn wide-ranging lessons about the role of animals in social life, from the imaginations of nature at work in American zoos (Grazian 2015), to the place of pigeons in the social fabric of cities (Jerolmack 2013). An overarching theme of this work is how animals are instrumental in consolidating social life as symbolic cultural objects. Angelo, for instance, argues that cultural ideas of "nature" are variable and molded by our particular engagements with nonhumans (2013). Jerolmack and Tavory draw from Mead's concept of the "generalized other" to argue that nonhumans "mold the social self by structuring how one will be perceived by others and constraining the possibilities for alternative presentations of self" (2014). This chapter builds especially on work in this vein that has explored links between human-nonhuman relationships and the formation of social group identities, including how animal practices reflect and reinforce ethnic identity (Jerolmack 2007; Lassiter, Griffith, and Wolch 2002; Mayorga-Gallo 2018) and how certain species become symbolic touchstones in contentious interpersonal conflicts (Farrell 2015).

I examine Alberta's rat control program as part of a broader narrative process of meaning-making that serves to define the boundaries of Albertan collective identity. Put more simply, who we are is (in part) the stories that we tell about ourselves, and the rat control program is one such story, or rather, a collection of stories. "Alberta is rat-free" and "rats are menaces to society that must be killed," for instance, are narratives that contribute to establishing a sense of collective identification. As I will discuss, Alberta's "rat-free" status is not absolute and is more fluid than the phrase would suggest. Nonetheless, as a narrative, the notion of a rat-free province is a meaningful and powerful claim in the cultural imagination, even if its material reality is more complex.

More broadly, this reveals how animals shape the negotiation of group identity in unique ways. A dominant lens through which sociologists have approached the study of group identity and membership is the concept of "boundary work," or the mechanisms by which people imagine and negotiate the limits of social categories and intuitively understand the lines between "us" and "them" (Lamont and Molnár 2002; Tilly 2004). This perspective depicts group categories (in terms of such axes of identity as ethnicity, religion, or class status, for instance) as dynamic and constantly renegotiated through discourse and interaction. For instance, recent scholarship has demonstrated how sonic styles (Schwarz 2015) and aesthetic judgment (Wohl 2015) can be central factors in consolidating group identity, how a culture of privacy is integral to the boundaries of membership among the ultra-wealthy (Farrell 2020), and how boundary work itself might be delegated to classifications made by "anonymous others" (Tavory 2010). In this paper, I show how animals participate in boundary work in unique ways, because, as both cultural objects and elements of the broader biophysical landscape, our relationships with them are both spatial and symbolic in nature. As such, paying attention to the role of human-animal relationships

provides important insight into how group identity and the limits of group membership are achieved through an interrelated negotiation of spatial, geographic borders and symbolic, discursive ones.

It could rightly be pointed out that other elements of the biophysical landscape, like rivers, trees, mountains, or even buildings also certainly function as symbolic objects, and we do of course relate to all these both spatially and symbolically. Nonetheless, animals are unique among this list for their sentience and for their active capacity in social life. As totemic symbolic objects, they are elevated to the level of near-human, quasi-anthropomorphized characters. Whereas the oak tree surely symbolizes sturdiness, the rat on the Canadian prairie actually acts out its role as a demonized villain (however willingly or unconsciously) when it crosses the Saskatchewan border and vexes Albertan farms. It is this combination of mobility and symbolic potency that makes animals salient figures in the related processes of boundary work and placemaking. Doreen Massey (1994) influentially argued for a retheorization of place as increasingly formed through movement rather than fixity, anticipating the subsequent boom in scholarship from other human geographers on "mobilities." Massey's argument diverges from those of scholars like David Harvey, that accelerated globalization has rendered placemaking an exclusionary and reactionary process wherein people draw boundaries to assert a fixed, "militant particularism" in the face of dizzying and homogenizing movement and change (Harvey 1997). While Harvey's notion, borrowed from Raymond Williams, appears increasingly prescient in light of numerous instances of reactionary placemaking projects built around borders (nativist calls for a US-Mexico border wall being a case in point), the negotiation of these physical boundaries and the collective identities they symbolically enclose is borne out through the movement that

Massey emphasizes. Animals' mobile symbolism in particular and our human interactions with their movements is a key social process in drawing these lines of demarcation.

Specifically, in Alberta, rat control consolidates notions of "Albertan" collective identity by reinforcing the spatial relationships that make Alberta's actual provincial boundaries meaningful distinctions. It is the totemic symbolism of rats, though, that make these borders mark more than just an arbitrary distinction. That is to say, the meaning of rats gives meaning to the idea of a rat-free province. By drawing a line in the prairie and systematically defending it against rats, Alberta's program both continuously constructs the rat as a symbolic villain worthy of lethal force and, in the process, maintains a cultural narrative that doubles as an identity-defining moral claim ("Alberta is rat-free"). The relationship between rats and Albertan collective identification recalls Tim Cresswell's (2014) argument, drawing on Mary Douglas, that a meaningful sense of place often coalesces most potently around notions of what lies "outside" or out-of-place. Moreover, the interplay between meaning and materiality involved here highlights animals' spatial and symbolic capacities; the symbolic identity of the rat transcends its physical, material reality, but the narrative of a rat-free Alberta is deeply tied to both rats' spatial distribution *and* their cultural meaning. My analysis of animals in boundary work builds on Bail's (2008) observations that a typology of "symbolic boundaries" constrains immigrant populations' access to group belonging as much as political borders do, by shedding light on the ways these symbolic and spatial boundaries emerge and are negotiated in tandem.

Historical Background: Oppositional Identification in Alberta

The history of placemaking and collective identification in Alberta must be understood in terms of the province's uneasy relationship with Canada at large. The provincial government of Alberta has a longstanding history of clashes with the Canadian

federal government and has frequently attempted to assert its own autonomy and resist what Albertans feel are inappropriate impositions by the Canadian state. A pivotal moment in the history of these tensions was the enactment of the National Energy Program (NEP) by Pierre Trudeau's Liberal government of the 1980s, which "included policies to regulate the prices of oil and gas in Canada, to impose several new taxes on the oil and gas industry, and generally increase the federal role in the sector" (Cairns 1992). The legislation was wildly unpopular in western Canada, and particularly for Albertans, a large portion of whom saw it as exploiting their province's robust energy sector on behalf of eastern provinces and at the expense of Alberta's own interests.

The resentment of the NEP contributed to the political and cultural discourse in Alberta and neighboring provinces known as "western alienation," which Roger Gibbins has described as "a political ideology of regional discontent … [encompassing] a sense of political, economic, and … cultural estrangement from the Canadian heartland" (1980:169). Gibbons goes as far as describing western alienation as a "cloak or costume" put on by Albertans "to position themselves with respect to the national community; they learn its tenets as they emerge from the egg, and seldom lose faith no matter where in Canada they might come to live" (Gibbins 1992:70). While Albertan culture is not monolithic, the ideology of western alienation and a related sense of resentment for the mandate of Canada's national government are foundational to the conservatism that enjoys preeminence in the province's political climate.

In terms of national politics, this hostility between Alberta and the Canadian federal government has manifested in various ways. At times, Alberta and its neighbors projected a desire for a greater voice in national affairs, as evidenced by the right-wing Reform Party's use of the slogan "The West Wants In." At other times, though, the current of western

alienation has been channeled into movements for autonomy for Alberta and related assertions of its distinct cultural identity. A political movement called "Alberta Agenda," founded in 2000 by a group of Alberta conservatives that included future prime minister Stephen Harper, is a key example of this desire for autonomy in the province. Its political message is perhaps best summarized by the text of a prominent billboard on Alberta's Highway 2, which I passed countless times during my fieldwork and was my first introduction to Alberta Agenda: "MORE ALBERTA LESS OTTAWA." Alberta Agenda introduced its policy aims in a letter known as the "Firewall Letter" for a passage that reads "It is imperative to take the initiative, to build firewalls around Alberta, to limit the extent to which an aggressive and hostile federal government can encroach upon legitimate provincial jurisdiction."[2]

The cultural sentiments of western alienation are certainly not confined to Alberta alone, but as Alberta Agenda's rhetoric demonstrates, they are a particularly strong current in Alberta's provincial politics (and are enflamed by the economic tensions surrounding the province's fossil fuel industry and Canada's national energy policy). The notion of its unique and alienated position in the country extends beyond the arena of politics, as prevailing cultural narratives in Alberta have consistently cast it as "a maverick agrarian region that is distinct … from the rest of Canada" (Blue, 2008: 74) with its own unique iconography. Steven Penfold writes that, contrary to popular imaginations of Canada as culturally unified under the iconography of ice hockey, the maple leaf, and Tim Horton's donuts, "ideas of national identity … are refracted through regional attachments" (2002: 26). In Alberta specifically, both the character of its collective identification and the discursive

[2]The text of the letter can be found here: http://westernstandard.blogs.com/shotgun/2010/03/the-firewall-letter.html

mechanisms that construct it are oppositional in nature; Alberta is constructed in the regional cultural imagination by a meaning-making process that explicitly sets the province apart and rejects the eastern, Ontario-centered hegemony. For instance, Blue (2008) examines how "Alberta Beef" has been elevated from an otherwise arbitrary agricultural commodity to a salient marker of Alberta's regional identification that signifies the masculine, rural, cowboy culture at the heart of Alberta's cultural mythology and distinguishes it from Canada's cultural identity at large.

Alberta's rat control program began in the 1950s, well before the NEP enflamed tensions between western Canada and the federal government, but its inception can be understood as part of the province's overarching will to act as a distinct entity. As Phil Merrill narrated it to me in one of our interviews, the success of the program benefitted from some serendipitous timing in terms of rats' progression across Canada and the development of the province's administrative capacities. He compared the beginning of the program to the situation in neighboring Saskatchewan when rats first arrived there two decades prior:

> Their government wasn't very organized. … They didn't have many departments. When they hit our border in the '50s, we were just barely getting going. We had a Department of Health, we had a Department of Agriculture and we could find the money to put up the program. Whereas if they had hit us in the '30s, they would have come right over. It was just kind of a timing thing.

This particular historical narrative of the program casts it as an early part of Alberta's project of consolidating its collective identity by using the organization of its provincial government to assert its geographical boundaries. The physical distribution of rats became a key factor in establishing those spatial boundaries that affirm Alberta as a distinct place with a coinciding collective identity. This is not to say that the project of rat control has been explicitly motivated by a desire to consolidate a quasi-nationalist regional identity for Alberta. The program was started by the Department of Health out of concern that rats might

spread plague and was eventually turned over to the Department of Agriculture, when it was decided that the biggest threats the animals posed were to infrastructure and to farmers' economic livelihoods.

Nonetheless, I will argue in this chapter and the next that rats and rat control have functioned as a tool of identity formation in Alberta because the program, while motivated by these earnest concerns around public health and economic productivity, is particularly resonant with Alberta's broader oppositional identification rooted in boundary work. As discussed above, a potent aspect of Alberta's cultural mythology is the notion that it is a distinct geographic, political, and cultural entity. Likewise, the rat control program is a cultural narrative of regional exceptionalism that affirms a "sense of place" in Alberta by reinforcing its discursive and spatial boundaries. This regional identification is built on insider-outsider relationships that can sometimes be nebulous; the "outsiders" in this case are most easily identified as the political and cultural elite of eastern Canada who might impose undue influence on Alberta, while, by comparison, the province shares an affinity with neighboring Saskatchewan for their similar experiences of alienation. This makes the process of boundary work more complex, as Alberta's project of oppositional self-identification and placemaking proceeds in a way in which its most proximate neighbors are not necessarily the most potent objects of that opposition. The rat thus functions as a useful symbolic "outsider" against which Alberta can clarify its geographical and cultural boundaries. The placemaking effectiveness of the spatial process of rat control is directly tied to the related construction of the rat as a vilified cultural object. As I will show in Chapter 3, this is especially apparent when examining the shifting cultural meaning of rat control in light of emergent demographic changes and related contestations over collective identification. While these changes indicate contemporary challenges to the resonance of rat

control as a cultural narrative, the program maintains a prominent place in Albertan public life.

Rat Control on the Alberta Prairie

Save for its western border with British Columbia in the Canadian Rockies, Alberta is defined by rectilinear boundaries. This allows the rural farmland in the east to be easily sectioned into a grid. This system predates the advent of the rat control program, but it is used to systematize rat inspections and prevention. Because the main risk of infestation comes from the border with Saskatchewan, the most important lines of demarcation are the "ranges" that correspond with east-west distance from that border. Each range is six miles wide, meaning "Range 1" refers to the narrow stretch of land within six miles of Saskatchewan.

This was explained to me on a ride-along in the RCZ with Jesse, the PCO in charge of inspections in this area, and Phil Merrill, Alberta's provincial rat and pest specialist, as we all drove east on Highway 9. Jesse noted that we were then in Range 3, where we stopped at a few properties that were quickly determined not to have rats. At the first of these, a small house with a shed, we did not even leave the truck. Jesse noted from the driver's seat that the floor of the shed was lifted a foot or so off the ground, which he said makes the temperature inside unsuitable for rats. He also noted that it was clear that the owners of the property are in and out of the shed frequently for work on their farmland, which means that if there was a rat, they would almost certainly have seen it and notified him already. The next property was a granary with several bales of hay stacked near it in the middle of a field. We left the truck this time, but mostly just for my education. Jesse explained to me he had baited these bales before, and that the snow there was fairly fresh, so

if a rat were there, we would see tracks. He also added “I probably baited these when I was bored.”

For Jesse and other PCOs who conduct these inspections, rats, or more commonly the absence of rats, are instrumental in establishing a social relationship with and definition of the landscape. While these inspectors are the people who most directly carry out the work of rat control, their efforts are contingent upon the cooperation and investment of the local residents, with whom the inspectors typically have close relationships. The absence of rats is mapped onto a set of individual and collaborative practices that more broadly serve to maintain the terms of an acceptable human-environment relationship. From small details under individual discretion like the height of a shed off the ground, to factors at the institutional level like the way these municipalities dispose of garbage, various practices combine to form a meaningful social process that squares the socio-environmental order here with prevailing sets of cultural values. The rat control program is a central part of this process, as the “rat-free” status is a point of collective identity and pride, stemming from the maintenance of a particular state of human-nonhuman relations. Hence, while PCOs like Jesse ensure the area is rat-free, they also undertake a more general community enforcement of the socio-environmental standards here.

Another PCO, Dave, brought up a specific example to illustrate the spirit of this collaborative effort during an interview with him and Phil. A property had an old structure that became infested with rats and had to be burned down. Bob, a resident of the area, had frequently assisted the PCOs in charge there by conducting inspections when they were busy or out of town, and Jesse contacted him for help with this job. Phil recounted in detail:

> Bob brought his fire truck from the county and a crew so that when we were burning the building, if we had problems, he had the fire truck there. So it wasn’t just Jesse looking after the rats. Jesse was killing the rats, but the [municipality] provided the

> manpower and the equipment, not only just the fire truck but they brought a pay loader to push the remaining part of the building into the pit and fill it in and move the steel granary away. So it's a corporation.

During my ride-along, I experienced another instance of this sense of community collaboration. On one of our stops to inspect some bale stacks on a farm, Jesse's truck got stuck in a deep pocket of snow, its wheel's spinning as he tried to back up onto the road. Jesse was more annoyed than concerned, and he contacted a resident who lived nearby, and who, after about fifteen minutes, arrived with a large tractor to pull us out. While Jesse was not enlisting help specifically for rat control this time, the incident demonstrated how Jesse relies on the broader community in the area for assistance in his PCO duties. Beyond these occasions where he requires their direct help, he also depends on them to do the everyday upkeep and maintenance of their farmland and properties in accordance with the rat control program's guidelines.

While for outsiders the cultural narrative of a rat-free Alberta may suggest that the Alberta-Saskatchewan border is marked by an impenetrable rat-proof fortress, the residents near the border who participate in these collaborative efforts are well aware of the effort that goes into continually maintaining their province's rat-free status. If fact, Dave and Phil acknowledged the fluidity of that status in the Rat Control Zone by noting rats' mobility. Dave began by conceding that Alberta's "rat-free" status is not absolute:

> You know we're here on the border. … For the amount of feed that's trucked through Alberta, coming out of Saskatchewan, and the amount of equipment that comes out of Saskatchewan into Alberta - cattle liners, you know, even personal vehicles. They're liable to catch a ride, right?

What Dave's observation illustrates is that the notion of a "rat-free" Alberta is not a static state of affairs but rather an ongoing process that necessitates continual maintenance. In this respect, it is best understood as a cultural narrative rooted in a material status, but one that elides the complexities of that status. Phil provided further clarification:

> We have two definitions of "rat-free." One is we're rat-free right now, until we get the call that there's a rat and then we go exterminate that rat and then we're rat-free again. Another definition of "rat-free" means we don't have a breeding population of rats. So, at one point in time we might have an investigation that's a breeding population, but we get rid of that within a very short period of time and then we don't have a breeding population.

As a social process, rat control maintains the efficacy and symbolic importance of the broader cultural narrative of a "rat-free" Alberta. Most people may not have the subtle distinctions Phil notes here in their minds when they think of Alberta's rat-free status, but even with these qualifiers, it is the maintenance of the dynamic conditions in the Rat Control Zone that makes the cultural narrative meaningful for the rest of the province. Though the material reality of the "rat-free" status is fluid, Dave was adamant that there was a palpable sense of pride around it on the Alberta side of the border.

> You'd be surprised how [proud] people are - if you were to … go straight north and south [from here], they're pretty happy about it, that they can say they're rat-free. For sure.

Nonetheless, Phil indicated that the narrative of a rat-free Alberta is most compelling for those Albertans who are least often confronted with the fluidity of that status. In other words, there is a spatial component to the narrative's salience, wherein it is stronger further away from the Rat Control Zone:

> I think the only ones that would be a little bit not so proud are these guys right along here that get the occasional infestation who say, "Oh well we're not really rat-free - I had rats five years ago." … You know, "I'm always catching a rat." They probably don't have quite the same pride as somebody further out that says "Hey, well I don't [ever] have to worry about rats."

The fluidity of the province's rat-free status aside, the inspection work in the Rat Control Zone is still central to the symbolic weight of the cultural narrative of rat control. If fact, rather than diluting the narrative of Alberta's rat-free status, the acknowledgement of infrequent infestations on the Alberta side and of the human mobility that facilitates them actually demonstrate the symbolic weight of that narrative; while the border is porous to

people to the point of being almost unnoticeable, it is made a meaningful boundary by the stark difference it represents in terms of the distribution of rats. Put another way, the easy movement of people and materials across the border threaten the idea of "Alberta" as a distinct place with an associated identity, but the rat control program functions as a placemaking narrative. Even through occasional infestations on the Alberta side may mute the sense of pride in being rat-free the residents closest to Saskatchewan feel, these inspections still make the border between Alberta and Saskatchewan a stark divide with respect to the likelihood of a rat sighting.

This principle was best demonstrated to me on a brief detour into Saskatchewan during my ride-along. After a few uneventful stops in Ranges 1, 2, and 3 on the Alberta side of the border, Phil and Jesse seemed determined to find a rat while I was with them, as if my trip there would be something of a waste otherwise, and the easiest way to accomplish this was to cross the border. Save for a small roadside sign welcoming us to Saskatchewan, there was little indication when we crossed the border; the landscape is more or less identical on either side. As we pulled up to a farm a few minutes after crossing over, Jesse received a video message from a resident of the property, a friend of his. It showed a dog chasing and killing a rat, and almost immediately we looked up to notice the dog from the video running through the snow-covered prairie chasing another rat. Jesse's friend who sent the video was moving bales of hay with a large tractor, and nearly every time he lifted one, he uncovered another rat, which was then pursued by the dog.

The ease with which we were able to find an infestation, mere miles into Saskatchewan is an indication of how rats play a key role in making the provincial border a meaningful boundary not just for the political organization of the Canadian state, but also for the cultural lives of the people who live near it. Saskatchewan and Alberta residents in this

area share the same environmental conditions and have cultural, economic, and lifestyle similarities that engender mutual affinities transcending the provincial boundary. However, it is through these same aspects of commonality that rats operate to make "Albertan" versus "Saskatchewanian" distinct identities here. One of the main impediments to making this area on the Saskatchewan side reliably rat-free, according to Merrill, is that rat infestations cannot be effectively quelled by treating individual sites if neighboring properties also have rats. In fact, the infrequent infestations that happen in Alberta typically result from infestations in bordering properties on the Saskatchewan side, but when this happens, Alberta's rat control team dispatches with the problem before it spreads farther.

Jesse tells me that often people in this rural area may not freely discuss it if they have a rat problem, for fear that it will reflect poorly on them as a farmer, noting that it might be seen as "irresponsible." I heard this sentiment in various other contexts during my trips to Alberta. Merrill would later tell me that there is a "stigma" associated with having rats on your farm, and that Saskatchewan residents sometimes react defensively to Alberta's boasting about its rat-free status, sometimes even challenging the validity of such claims. Another interviewee, a professor at the University of Calgary and a life-long resident of Alberta, tells me that she grew up near the Saskatchewan border, where people on the Alberta side would refer to their Saskatchewanian neighbors with the mildly derogatory term "rat-landers," a variation on "flatlanders." The set of values around what it means to be a responsible farmer is not particular to either side of the provincial boundary, but in Alberta there is a long-enough established system in place, with regular inspections and cooperation between Merrill's staff and the residents, that infestations do not take hold. There is thus a sense of pride on the Alberta side of the border stemming directly from the intentional and institutionalized nonexistence of rats there. That positive common identification in Alberta

exists not because the prevailing values there are different from those on the Saskatchewan side, but because they are the same.

These commonalities notwithstanding, Alberta's rat control program makes the provincial boundary a demarcator of a specific form of difference and thus a significant landmark for Albertan cultural life. It transforms what is otherwise an invisible line through the prairie into an important symbol in the cultural narrative establishing both collective identity and a sense of place. Though its cultural significance lies in the discursive realm of semiotics, the border's meaning is given salience by the physical distribution of the lives and bodies of rats. Likewise, rats are symbolic cultural objects, but because they are also sentient animals, their cultural meaning is mobile. It is in the combination of our relationship to them in both these respects – symbolic and spatial – that rats become instrumental in the cultural narratives of boundary work. In other words, while rats' mere presence or absence lends a significance to the Alberta-Saskatchewan border, their symbolic meaning as cultural objects is what makes this distinction important to collective identification and more than just an arbitrary difference.

The Rat As a (Contested) Cultural Object

While the cultural meaning ascribed to rats themselves is central to the broader meaning of the process of rat control, the semiotic construction of the rat in Alberta has a complex relationship to the real materiality of rat bodies. An awareness program in the early 1950s when the program was just beginning sought to educate Albertans on the visual appearance of rats, as many had never encountered one. The Department of Agriculture's annual report from 1952 states that "45 rat specimens preserved in plastic containers, were placed in District Agriculturalists' offices and Schools of Agriculture to familiarize people

with the appearance of rats."[3] This effort to make the rat an identifiable cultural object has encountered challenges at times stemming from the necessity of drawing social, scientific, and cognitive boundaries around the category of "rat." In 1956, an animal thought to be a potential furbearer, referred to as "mura" were brought into the province, before being revealed to be "mutant Norway rats."[4] Initially, their owners were allowed to keep them, with special security provisions set for their enclosures, but by 1959 these owners exterminated them.[5]

Today, it remains important for the success of the program that Albertans be familiar with rats and remain vigilant in case they see one. Besides the RCZ, the other main preoccupation of the program is systematizing response to rats that stow away on vehicles and materialize in other parts of the province. To do so, the program has a hotline (310-RATS) that Albertans can call if they suspect they have seen a rat, and the PCO of that area will investigate if the tip is deemed legitimate. However, issues of species identification persist; during my ride along with the program, Merrill received a picture of a suspected dead rat via text message from a recent caller to the hotline and informed them that it was actually a different variety of rodent, which, he told me, is the outcome of most of these calls.

The program has also seen the limits of biological taxonomy as a criterion for the public's concept of the category of "rat" tested in a different way. Part of the public policy related to Alberta's rat control program is a province-wide ban on pet rats, to which a small population of would-be pet owners has objected. At question here is a set of criteria beyond

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[3] Department of Agriculture, *Annual Report 1952*, 29, item 2605, box 62, acc. 70.144, Provincial Archives of Alberta

[4] Department of Agriculture, *Annual Report 1957*, 50, item 2908, box 72, acc. 70.414, Provincial Archives of Alberta

[5] Department of Agriculture, *Annual Report 1959*, 50, item 3101, box 76, acc. 70.144, Provincial Archives of Alberta

species for defining "the rat" in the Albertan cultural imagination. Pet rats are a different kind of subject than the "menace" and "pest" the government's program has constructed the animals as. For one, they do not draw the affective response (at least from their owners) that the early propaganda posters (described below) and Merrill's continuing awareness campaigns suggest is appropriate for rats. They are voluntarily kept and cared for, rather than being considered "invasive" where they live. Furthermore, Merrill himself acknowledges that pet rats do not pose the same practical threats to his program's goals that the rats that might enter Alberta through the Saskatchewan border do, but he has reasons for keeping the ban in place:

> People who have them as pets [say] "why can't I keep a Norway Rat?" and "what if I neuter it?" and "it's just a nice pet" and we got quite a bit of pressure from the pet owners who had pet rats. And we were concerned about that, not because their pet rat is one that's going to escape and [affect] our program, [but] because we want to try and teach everybody we're rat-free. And if everybody's got a pet rat, we're not.

Nonetheless, Merrill's team deals with violations of this rule in a much different way than they deal with the other variety of rats they are concerned with. He tells me that his program has a partnership with an airline that flies the pet rats into neighboring British Columbia, which has no such ban, where they are delivered to a local shelter operated by the Society for the Prevention of Cruelty to Animals. So, while "species" remains the defining criterion guiding the province's overall anti-rat policy, there are factors, social in nature, that transcend this mode of classification and guide the program's specific practices with respect to the lives (and deaths) of the animals under their jurisdiction.

Another aspect of the program's approach to pet rats casts these contradictions into even starker relief. Merrill tells me that one of the ways his side has made peace with the population of pet rat advocates is with a compromise that allows pet shops to sell a species of pet "rat" called an African Soft Fur. Though this animal is commonly known as the

"African Soft Furred Rat," taxonomically it is classified in the genus *Mastomys,* as opposed to *Rattus,* which is the classification that Alberta's program officially has in mind when they claim to be "rat-free." Thus, there are two notions of what constitutes a "rat" existing simultaneously, if uneasily in Alberta: the formal scientific one favored by the rat control program and the more informal, common sense one that residents interested in keeping a rat as a pet might adhere to.

In sum, the cultural narrative of rat control rests on a notion of the rat as a cultural object with a shared and understood meaning. The precarious relationship between this meaning and the lives and bodies of the animals themselves recalls similar observations regarding other cultural objects, such as McDonnell's examination of AIDS campaigns in Ghana, where the materiality of objects like awareness ribbons, billboards, and condoms continually thwart the meanings and uses intended by the programs that produced them (2010, 2016) or Dominguez-Rubio's work on the fickle and fragile nature of art objects (2014, 2016, 2020). While the explicit logic of rat control in Alberta is based in scientific taxonomy, for the purposes of cultural narrative it is ultimately a more malleable, socially constructed category.

The construction of the rat specifically as killable and worthy of systematic eradication is essential to the process of placemaking and boundary work achieved through the material practice of rat control described in the preceding section. The claim of "rat-free" status and its significance rests on a collective, shared understanding of the boundaries around the category of "rat." Just as importantly, it necessitates that this shared meaning constructs the rat as a symbolic villain worthy of lethal force, which makes the spatial distinction marked by the geographical border a significant rather than arbitrary one and makes the idea of a "rat-free" province an achievement of moral superiority.

Rats and Other External Interlopers

Driving through Eastern Alberta during my trip to the Rat Control Zone, Jesse commented that his father often jokes about Canada's Prime Minister Justin Trudeau and liberal Canadians more broadly. When I asked him how he himself felt about Trudeau, Jesse replied, flatly, "I hate him," going on to elaborate by saying:

> He only represents the urban parts of Canada. He has no idea what it's like for rural people. No idea. He's bringing more immigrants in and giving more jobs to immigrants instead of Canadians.

Jesse sees Trudeau's government as failing to prioritize Canadians like those in this area of Eastern Alberta, particularly through its approach to immigration policy and asylum seekers. His comments reflect broader discourses that contribute to the overarching process of clarifying the borders of Albertan identity. The narrative of rat control combines with these oppositional discourses to erect borders around Albertan life. They must be understood as parts of the same overarching cultural process.

Alberta's rat control program faces challenges stemming from shifts in the province's population and related contestations over the practice's cultural meaning. Alberta's demographics are changing due to immigration, and it is becoming increasingly urban, which threatens the primacy of white rural culture as a boundary of regional identity. These changes accordingly challenge the 'resonance' (McDonnell et al., 2017) of rat control as a cultural narrative and its efficacy as a project of boundary work. Merrill explained the implications of these changes for his program:

> I'd say the biggest challenge right now is … to keep Albertans educated [about] the program. … Because I think our – not our farming community so much – but our urban community is totally changing and that's where the votes are. … To keep them excited about the rat program is probably our biggest challenge.

The changes Merrill notes are reflected in Canadian census data on Alberta's population. The population of Calgary, the province's largest metropolitan area, grew by more than 25% between 2006 and 2016, from 988,193 to 1,239,220 (Canadian Census 2006, 2016a). As this urban population grows, Alberta's racial and ethnic demographics are changing as well, with the last ten years seeing increased diversity in this respect. The percentage of the province's total population considered a 'visible minority[6]' has increased from 13.9 in 2006 to 23.5 in 2016 (Canadian Census 2016b; Treasury Board and Finance Office of Statistics and Information-Demography 2017).

For Merrill, these changes are consequential because they mean Alberta's cultural values are becoming less specifically tied to agricultural life. Particularly, Merrill says the less connection Albertans have to rural life, the less enthusiasm they have about programs like rat control:

> I think it's … a concern that these guys don't know where milk comes from, don't realize that somebody has to milk every morning, and therefore won't support those [types] of programs. They won't support the guys that inspect their milk and … [say] 'oh what are we spending money on that for?' And they don't understand.

Merrill acknowledges some amount of tension between the more quintessentially 'Albertan' culture of rural, agricultural life that has historically supported his program and the newer elements of Alberta that are more urban and more ethnically diverse. On a practical level, he worries that these demographic changes will mean the program's public support will decline to the point where it will lose its funding. Symbolically, this struggle reflects a crisis of the boundaries of identity in Alberta, as popular notions of regional culture become vulnerable to losing their efficacy. As a narrative of boundary work, the rat

[6] The term 'visible minority' is a census classification derived from Canada's Employment Equity Act, and refers to 'persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour.'

control program becomes a prism through which these tensions and anxieties are refracted, and the rat itself becomes a cultural object whose symbolic meaning is in flux. Various forms of institutional messaging have historically helped to breathe life into the cultural narratives that make rats salient objects in Alberta, despite their absence from the landscape. Merrill wants to reinvigorate that cultural messaging by 'educating' Albertans who are not familiar with or enthusiastic about the program, so they become supporters, a goal which he acknowledges has been difficult:

> [It's] not easy. … I'm having a really hard time even suggesting in the elementary school program, to give us an option, if a teacher wants to teach something on rats, 'here's a program.'

For years, he tells me, children were taught about rats and Alberta's rat-free status in elementary school. This was part of a broader campaign funded by the provincial Agricultural Department to increase awareness of and enthusiasm for the program and, in doing so, give rats a specific meaning in the cultural lives of Albertans. In the process, this campaign elevated 'the rat' from the physical bodies and lives of the rodents themselves into a salient cultural artifact that has meaning for Albertans. Alberta also produced a series of propaganda posters in the 1950s to build support for the program, which promoted a fierce antagonism to rats, and seemingly attempted to engender a negative affective response to the sight or even the thought of the rodents. Alberta's Department of Agriculture described the poster campaign this way in 1951:

> Over 2,000 large posters regarding rats were printed and distributed to elevator agents, railway station agents, schools, and post offices for posting in conspicuous places to inform the public of the encroaching menace.[7]

[7] Department of Agriculture, *Annual Report 1951*, 38, item 2557, box 60, acc. 70.144, Provincial Archives of Alberta.

The posters themselves are far from subtle. One poster (Figure 2.1) reads 'You Can't Ignore the RAT,' and at the bottom adds 'KILL HIM! LET'S KEEP ALBERTA RAT-FREE.' Another (Figure 2.2) depicts rats encroaching on the illuminated borders of Alberta, helping to brand rats as a 'menace' threatening the province from outside. The heading 'Kill Rats With Warfarin,' used on one poster, serves to strengthen the mental association of rats with extermination, by naming the primary anticoagulant poison used at the time[8]. It is also worth noting that many of these posters were commissioned by the Department of Public Health's Division of Entomology, which discursively lowers rats' status from rodent to insect, further serving to render them, as cultural objects, dispensable beings worthy of lethal force.

[8] Department of Agriculture, *Annual Report 1954*, 32, item 2716, box 62, acc. 70.414, Provincial Archives of Alberta.

Figure 2.1 *"You Can't Ignore the Rat" Provincial Archives of Alberta (acc. A17202b). Informational Poster circulated by the Alberta Department of Public Health, Division of Entomology.*

Figure 2.2 *"RATS are Coming!" Provincial Archives of Alberta (acc. PA1579.2). Poster circulated in the early years of Alberta's rat control program.*

The project of rat control in the province is an apt mechanism for establishing and reinforcing the popular current of Albertan exceptionalism and oppositional identity in a number of ways. For one, a logical reaction to the western alienation and resentment of

Ottawa that are such salient ideological currents to Alberta's regional identification is to assert the province's uniqueness and even superiority. The province's claim to rat-free status accomplishes this by giving Alberta a collective point of pride that distinguishes it from the rest of Canada (and North America, for that matter). In an interview, one caller to the 310-RATS hotline demonstrated the program's connection to Albertan collective identity when I asked him whether his decision to call the number was motivated by a desire to keep his personal property free of rats or to help with the broader effort of keeping the province rat-free. He replied "those two are the same thing, as far as I am concerned," indicating that controlling rats on his own property is connected to the province's larger project; as an Albertan, the goals of Alberta are his goals as well.

Importantly, the narrative of rat control is steeped in notions of "purity" and freedom from outside influence, key historical boundaries around Albertan identification. The boundary work of this identification can be observed variously in Alberta Agenda's rhetoric of establishing "firewalls" to protect the province from oppressive government influence, the resentment expressed by Jesse of Canadian immigration policy, and the ongoing project of securing the Saskatchewan border against an influx of rats. Each is connected to a notion of Alberta as a distinct and meaningful social, political, and cultural entity, and each define that entity by appealing to notions of the primacy of white, rural Albertans and their historical way of life.

Jesse's misgivings around immigration are also reflected at the provincial level by regression models, summarized in Table 2.1, which analyze data drawn from a national survey of Canadians regarding attitudes about immigration. In this model, I control for age, sex, annual income, and educational attainment, to examine how likely Albertans were to agree with several statements indicating negative attitudes about immigration. I find that

Albertans were approximately 58% more likely compared to other Canadians to hold that there is too much immigration to Canada, 63% more likely to believe that many people claiming refugee status are not actually refugees, and 42% more likely to believe that immigration imposes a severe strain on Canada's welfare system.[9]

[9] This analysis is based on the Environics Institute for Survey Research Microdata file Focus Canada Fall 2018 Survey, which contains anonymized data collected in the Focus Canada 2018 Survey. All computations on these microdata were prepared by the author and the responsibility for the use and interpretation of these data is entirely that of the author.

Table 2.1. Binary logistic regression models displaying odds ratios for agreement with statements regarding immigration to Canada. Values in parentheses are lower and upper bounds of 95% confidence intervals for odds ratios. An odds ratio of 1 indicates that the variable has the same relationship to the response as the reference category.

		"Overall, there is too much immigration to Canada"	"Many people claiming to be refugees are not real refugees"	"People coming to Canada claiming to be refugees are imposing a severe strain on our welfare system"
Key Measure				
	Alberta	1.579** (1.163, 2.144)	1.630** (1.203, 2.209)	1.418* (1.042, 1.929)
Sex				
	Male	1.046 (.865, 1.265)	1.501*** (1.247, 1.805)	1.129 (.940, 1.356)
Age *Reference Category: 18-29*				
	30 to 39	1.166 (.783, 1.734)	1.061 (.716, 1.571)	.957 (.656, 1.396)
	40 to 49	1.207 (.808, 1.804)	1.304 (.882, 1.928)	1.362 (.934, 1.985)
	50 to 59	1.788** (1.255, 2.547)	1.922*** (1.358, 2.722)	1.924*** (1.370, 2.700)
	60 to 69	1.373 (.969, 1.946)	1.989*** (1.415, 2.796)	1.924*** (1.380, 2.682)
	70 to 79	1.571* (1.080, 2.285)	3.028*** (2.094, 4.378)	2.363*** (1.645, 3.394)
	80 and over	.835** (.526, 1.325)	1.687** (1.089, 2.613)	1.550* (1.008, 2.383)
Education *Reference Category: Completed University*				
	No Secondary School	2.787*** (1.811, 4.289)	1.539* (1.005, 2.358)	2.584*** (1.666, 4.009)
	Some Secondary School	4.024*** (2.711, 5.973)	2.462*** (1.662, 3.649)	2.647*** (1.773, 3.951)
	Completed Secondary School	2.527*** (1.920, 3.327)	1.694*** (1.296, 2.213)	2.126*** (1.631, 2.772)
	Some College	2.894*** (1.914, 4.377)	2.544*** (1.684, 3.843)	3.136*** (2.051, 4.795)
	Completed College	2.179*** (1.667, 2.848)	1.764*** (1.360, 2.288)	2.097*** (1.622, 2.711)
	Some University	1.000 (.671, 1.491)	1.142 (.795, 1.640)	.924 (.647, 1.319)
	Declined to State	3.512*** (1.841, 6.702)	1.224 (.626, 2.395)	.974 (.504, 1.884)

***$p < 0.001$ **$p<0.01$ *$p<0.05$

By including these data, I do not intend to argue that rats stand in as one-to-one proxies for other forms of outside influence or imagined human interlopers, or that the rat

control program is a direct and causal driver of anti-immigrant sentiments. Nonetheless, rat control functions not only as a material practice to secure Alberta from rats, but also as a cultural narrative of border maintenance, which generates meaning that can be accessed in other sites and mechanisms of boundary work, such as these salient currents of nativism. As discussed above, the cultural narrative of rat control is inscribed spatially, on the landscape itself, and reproduces itself by ascribing a human-constructed morality to the lives of rats. Though the sense of Albertan collective identification borne from this oppositional narrative does not define Alberta in opposition to Saskatchewan specifically, the reification of the provinces' shared border through the control of rats is nonetheless an important symbolic process.

Rat control in Alberta, while rooted in a particular formulation of interspecies hierarchy, contributes to narratively laying the groundwork for power relations elsewhere in social life based on similarly conceived insider-outsider relationships. Likewise, nativist politics in turn make the border policing narrative of rat control more resonant itself. The notion of a "rat-free" Alberta, in other words, is an actively maintained narrative that contributes to defining what it means to be "Albertan" more broadly, which in turn dictates who is or is not; at the same time that rats are marked as killable in Alberta and, as noted above, even discursively lowered to the status of insects, antagonism towards outsiders like immigrants generates a similarly structured moral hierarchy along the lines of group membership. Neither of these phenomena causes the other directly, but they are mutually reinforcing parts of a broader cultural narrative of boundary work.

Conclusion

Alberta's rat control program reveals how animals may play an important role in the drawing of boundaries around social categories and group identities. In this chapter, I

discussed how the province's rat control program is a salient cultural narrative of placemaking and regional identification based on the combination of rats' symbolic meaning and humans' material, spatial interactions with them. Historically, Alberta's collective identification has been characterized by a potent cultural current of opposition to outside influence from the Canadian government and the cultural elite in the eastern part of the country and a related assertion of Alberta as geographically, politically, and culturally distinct. As discussed, this is complicated by the fact that, comparatively, Alberta has a greater affinity with nearby western provinces like Saskatchewan. Rat control provides a symbolic "outsider" against which the collective identification can be defined. The material process of rat inspection in the east of the province makes the provincial border a meaningful socio-spatial boundary of the province itself and of the province's cultural identity. The meaning of this spatial process, though, is animated by the symbolic cultural meaning of the rat itself. This relationship reveals the unique character of animals as both objects of material culture that we interact with in space and symbolic characters with meaning that transcends those immediate physical interactions.

Animals act as key vectors of symbolic meaning where spatial and symbolic logics consolidate into notions of "us" and "them." The implications of these lines of demarcation are not value-neutral. Animals often become particularly instrumental in the more "reactionary" imaginations of place rooted in exclusionary politics described by scholars like Harvey. In the United States, for example, a seminal political issue of our time is the debate over immigration policy and a national border wall that has taken on as much cultural meaning as it has geopolitical significance. Within the discourse around this issue we have seen the language of animality leveraged a number of times, including Donald Trump's insistence that would-be immigrants are "not people," but "animals" (Davis 2018) and his

son, Donald Trump Jr.'s comparison of the proposed wall along the border to those surrounding enclosures at zoos (Durando 2019). The New York Times has also reported on the reemergence of moral panic regarding wolves in Germany, which, similarly to the case discussed in this paper, mirrors right-wing anxieties over immigration there (Bennhold 2019).

The process of boundary work introduced in this chapter, wherein a meaningful notion of Albertan collective identity coalesces, is no less inflected with nativist sentiments. Alberta's investment in keeping rats out maps onto other exclusionary impulses, particularly the nativist currents of anti-immigrant sentiments that emerge are stronger in Alberta than elsewhere in Canada.

Chapter Three

Rats and Urban Spatial Metonymy

Typically, when people refer to Los Angeles's City Hall, they refer specifically to the 32-story Art Deco tower that houses the mayor's office and the city council chambers, an iconic 1920s era building that looms over the 101 freeway in the heart of downtown. More accurately though, City Hall is a complex of buildings that also includes a cluster of other nearby high-rises. The buildings themselves can at times feel as impenetrable and labyrinthian as the bureaucratic machine they contain. I learned this the first time I visited City Hall for this project, to interview an employee of the city's Department of General Services, when I arrived comfortably early before spending an hour locating the appropriate parking structure for a visitor (where I made the grave error or choosing an entrance intended for employees only), and misinterpreting the directions of multiple city employees before ultimately arriving out of breath and barely in time.

In February 2019, it was reported that City Hall had a rat problem. Local news outlets shared amateur footage of panicked bureaucrats shrieking and recoiling as a rat scurries across a hallway, before one employee attempts to trap it in a cardboard box. These reports coincided with a documented typhus outbreak in downtown LA, and, when a city attorney caught the disease and subsequently sued the city, claiming she contracted it while at work, these two events became inextricable. In the aftermath of this incident, the LA City Council weighed various actions, including replacing all the carpets in the entirety of the City Hall complex. Around the same time, Herb Wesson Jr., the president of the LA City Council, released a statement that read: "Employees shouldn't have to come to work worried

about rodents. We will do whatever it is we need to solve the problem and protect our city's public servants and those who visit city hall."

When Wesson refers to workers "worrying about rodents," it can be taken in one sense at face value; he surely believes that city employees should be free from unpleasant close encounters with rats like those documented in the abovementioned video clip, while going about their jobs. In a larger sense though, Wesson was likely referring to the broader implications of these encounters. For employees in City Hall, to "worry about rodents" is also to worry about the fleas that those rodents may harbor and the diseases like typhus that might be transmitted by either of these unwanted nonhuman officemates. The infestation in City Hall served as an uncomfortable reminder that urban life, even under the fluorescent lights of a high-rise office building, unfolds within a broader ecosystem. Nonetheless, it is worth noting again that Wesson refers specifically to rodents in his statement, which is in turn an indication of the power of rats not just to spread disease or inspire revulsion, but to symbolize all those various ills at once.

In examining the particular case of LA City Hall's rat problem and the city's response to it, this chapter explores how rats contribute to ordering our social and spatial experiences of city life through their potent symbolic meaning. In urban contexts, rats are living avatars of dirtiness and disease, as well as other social ills like poverty, and, as will be discussed further in the next chapter, homelessness. When the rat problem in City Hall began, the city initiated a wide-reaching response that included, among other measures, more frequent inspections performed by the city's contracted pest control vendors, a new protocol of weekly cleanings of the exterior of the buildings, and the removal of much of the landscaping in the area in order to make the environment less hospitable to rats. To shed new light on these efforts, I argue that rats function as what I refer to as "spatial metonyms"

or physical entities who carry such potent symbolic meaning that they order our social experiences of urban space. We understand the spatial logics of cities in terms of ontological dualisms like nature-society, human-nonhuman, and especially the very basic notion of the threshold between "inside" and "outside." By trespassing them, rats clarify these meaningful distinctions. In light of this, the city's rat control effort effort is not simply a project of managing the physical distribution of the animals, but is more broadly concerned with maintaining the particular terms of our social experiences of urban space.

Spatial Metonymy and Nature in the City

The episode of LA's rat infestation in City Hall is a window into the broader topic of how we relate to nonhuman life in urban contexts. Both the symbolism of rats in city hall and the concerted municipal project of preventing their entering these buildings are part of a larger process of urbanization, specifically insofar as that process is understood as a constant negotiation of the "social" and the "natural."

Most often, cities are axiomatically thought of as the polar opposite of nature. If there is a "nature/society divide," then a dense urban center like LA's Civic Center district is the epitome of the "society" part of this dualism, a place where human life has most thoroughly and successfully bent the natural world to its will. Since the 1990s, a group of interdisciplinary scholars led by cultural geographers has worked to specifically counter this notion by retheorizing urban environments as constantly unfolding socioenvironmental processes (as opposed to wholly social ones). This approach to city life is called "urban political ecology" (UPE), and, unsurprisingly, it emerged as an offshoot of political ecology, which was itself pioneered in the 1980s as an attempt to "[combine] the concerns of ecology and a broadly defined political economy" (Blaikie and Brookfield 1987:17). In general, political ecologists attempt to explain the complex relationships between society and the

natural world, and especially the uneven power dynamics embedded in those relationships. Urban political ecology brought these concerns explicitly to cities, in an attempt to further break down the persistent notion that social processes are fundamentally sequestered from natural ones. In an early formulation of the field's perspective, pioneering UPE scholar Erik Swyngedouw (1996) draws on Donna Haraway's (1991) concept of the cyborg, a hybrid combination of human and machine, to assert that cities are similarly hybrid entities of human and natural processes. He influentially termed this reimagined notion of urbanizing processes "socio-nature." This concept built on earlier work by scholars such as historian William Cronon, who examined the growth of Chicago as a fundamentally socioenvironmental process (1992).

Since this early formulation, work under the banner of UPE has, in general, analyzed the characteristic ways that nature is imagined in cities and consciously brought into them, as well as how city life is fundamentally shaped by the procurement of natural resources. For instance, in *Concrete and Clay,* Matthew Gandy (2003) takes a sweeping approach to the role of nature in New York City that addresses both of these interpretations of the concept, noting how "public parks, botanical gardens, and tree-lined boulevards [represent] the explicit inclusion of a designed nature into the heart of the city," and how New York's evolution has necessitated a transformative system of water supply. Maria Kaika (2005) also emphasizes this latter theme by arguing that water is key to understanding cities as socioenvironmental processes. One of UPE's foundational texts, a 2006 edited volume titled *In the Nature of Cities,* features case studies that examine the imaginaries of nature that contributed to Coney Island's evolution as amusement hub (Darling 2006), the impact of material flows on environmentalism in Toronto (Keil and Bordeau 2006), and the discursive

construction of nature as a source of crisis during a period of severe drought in Athens (Kaika 2006).

This scholarly turn has powerfully reimagined the natural world's place in city life, though critiques of this work reveal just how persistent and troublesome the ontological nature/society divide remains, despite UPE's efforts to subvert it. Angelo and Wachsmuth (2015) evaluate UPE's progress based on two primary goals laid out in original formulations of the field from Swyngedouw (1996) and Roger Keil: "to bring the methodology of political ecology into urban settings to which it had hitherto not been applied," and, following the lead of Henri Lefebvre (1992), "to retheorize urbanization itself as a process of socionatural and not only social transformation" (Angelo and Wachsmuth 2015:18). They charge that, to the point of their writing, UPE had succeeded in only the first of these two goals, while failing to deliver on its promise to duly expand notions of urbanization beyond the artificially bounded limits of discrete cities. This tendency to treat cities and urbanization as interchangeable concepts, a trend they term "methodological cityism," subtly reproduces the very nature/society binary that UPE has worked to deconstruct. Urbanization, after all, is a much more fluid and wide-reaching phenomenon than the focus on individual cities suggests. Given UPE's central tenet that cities are inescapably connected to the more conventionally "natural" hinterlands beyond, Angelo and Wachsmuth (2015:21) ponder, "is strip mining in the Appalachian mountains any less a case of urban environmental injustice than polluted rivers from sewage treatment plants in the Bronx?"

Perhaps the most important takeaway from this critique is just how deeply embedded the notion of a nature/society divide is in our experiences of urban life. While it is an important intellectual project to break down this dualism for the sake of developing a more nuanced understanding of urbanization processes, the difficulties that critically thinking

academics have encountered in doing so suggest the extent to which our everyday, intuitive sense of cities is framed by this division. In other words, the nature/society divide may be an analytical hurdle to overcome in one sense, but in another, crucial sense, it is a deeply important source of cultural meaning to be examined. Los Angeles in particular has a deeply complex and ambivalent relationship to nature that has long attracted the eyes of social analysts. Describing a perverse trend in the cultural imagination, Mike Davis (1998:227) observed that "the whole world seems to be rooting for Los Angeles to slide into the Pacific Ocean or be swallowed by the San Andreas Fault." Jenny Price offers (2006) "13 ways of seeing nature in LA," emphasizing the surprisingly enduring potency of nature for a city that confined its river to a "concrete straightjacket." The problem of rat control in Los Angeles, meanwhile, is an ongoing social process where the legitimate place of nature in the city is negotiated in terms of the nature/society divide, and, as we will see later, other similar and corresponding spatial binaries. As such, it is also a part of an urbanization process with implications that extend well beyond the confines of the dense urban center.

For instance, a persistent source of controversy surrounding LA's attempts to control its rat population has been the collateral environmental damage of its chosen extermination methods. As is the case in both of the other sites in this book, the primary tools of rat control in Los Angeles are anticoagulant poisons. I learned during my interviews with city officials that LA has considered a number of different alternatives to this method, in large part because of loud public objections to anticoagulants over their tendency to kill more than just rats. Specifically, the calls to ban anticoagulants were catalyzed by the death in 2019 of a mountain lion in the Santa Monica Mountains just outside LA. The mountain lion had been tracked as part of a National Parks Service study of the animals and was found to have ingested rat poison by eating smaller animals who had themselves been poisoned. For the

most part, of course, the concern over these poisons is not motivated by concern for rats themselves. Rather, the controversy illustrates how rat control is an exercise in defining what kind of nature should be allowed into cities, an exercise that is inextricably linked to the project of wildlife conservation. Both these concerns take place within a larger process of urbanization that connects City Hall with LA's surrounding wilderness.

As Angelo (2019) argues, while we think of cities as antithetical to the natural world, the intentional mobilization of nature is nonetheless a widespread, salient, and longstanding practice of urbanization itself; bringing curated nature to cities in the form of "urban greening" is a fundamental marker of the very development of an urban experience. Certain imaginations of nature, such as tree-lined streets, landscape architecture, and urban oases like Manhattan's Central Park are indeed quintessential aspects of the urban landscape. But if we consider rats and rat control in terms of the practice of urban "greening," this aspect of the urbanization process is revealed to be more complex and expansive than these most recognizable aesthetic deployments of nature let on. While the notion that "green" is "good," or that there is a social benefit to bringing elements of supposedly external nature to the city center, has become a nearly universal truism embedded in the social imaginary (Angelo 2019, 2021), rat control is an arena where the limits of this premise are negotiated. At stake in this negotiation is the moral underpinning of our spatial experience of city life. While "green is good," rats are simultaneously a form of urban nature in their own right and living symbols of disease, filth, and the general ills of urban life. When LA began combatting its City Hall rat problem, part of the response was to strip the area of its landscaping, emptying planters that might house rodent burrows in addition to aesthetically pleasing flora. Similarly, one of my interviewees, a biologist working on a large-scale urban rat control project spanning several major cities told me: "if your goal is to bring more rats into your

neighborhood, the best possible thing you could do is start a community garden." The practice of urban greening thus entails reconciling a set of sometimes contradictory notions within the collective urban imaginary: nature, in the form of trees and plant life, confers social benefits to urbanites but the rats they attract are a scourge to be eliminated. Meanwhile, exterminating rats is a necessary public health prerogative, yet it threatens nature in the form of more charismatically "wild" animals like mountain lions.

Rats ultimately show us how, in addition to the nature/society divide, urban imaginations of nature are ordered along a variety of other ontological dualisms like healthy vs. unhealthy, human vs. animal, and inside vs. outside, which all contribute to our popular understandings of nature as "good." Rats clarify many of these distinctions by trespassing them. They are animals that thrive most alongside humans. They belong in the street, yet, as City Hall's infestation shows, the stark thresholds that for us mark the border between inside and outside are porous to them. The practice of rat extermination is an attempt to exert control over these spatial experiences of the city and retain order along these dualisms. Furthermore, rat extermination is an important arena for this spatial management because of rats' potent cultural meaning, especially as avatars of infectious disease. The spatial management of rats is, by proxy, both practically and symbolically, the management of public health and social order. It is a necessary measure if we are to invite nature into cities on our terms, reaping the social "goods" it offers while protecting ourselves from its physical dangers and moral ambiguities.

To capture rats' symbolic power in this context, I describe them as what I call "spatial metonyms." The concept refers to metonymy, the figure of speech in which a concept or object is replaced by something closely associated with it, such as the use of "the crown" to refer to a monarch or royalty in general. Thus, for rats, it describes their power to

carry cultural meaning that stems from their material activities but nonetheless far exceeds them. The next section deals directly with rats' associations with illness and disease and examines how these symbolic associations transcend their role as vectors for pathogens in urban environments. Materially, rats are undeniably an important node in the transmission of infectious illness, but they come to function in the cultural imagination as a metonymic emblem of the entire epidemiological system within which they participate. The notion of spatial metonymy captures how discursive cultural associations that are captured in literary devices and figurative speech become inscribed in space to shape the social dynamics of cities. By functioning figuratively as metonyms for the insidious dangers of disease and squalor, they physically carry these symbolic meanings where they travel in urban environments and in doing so they mark these locations as tainted.

In the next two sections I use this analytical lens and the case study of City Hall to make sense of rat control as a process of urbanization. I argue that rat control, while a materially important public health initiative, is an equally important symbolic intervention to manage rats as spatial metonyms. As I will discuss, the looming symbolic meaning attached to rats demands an organizational response that extends far beyond "pest control" as typically understood, involving myriad city departments and other bodies. This response is a management of spatial dynamics, especially as they relate to the distribution of nature in the city.

The Outsized Symbolic Power of the Rat

Compared to the two other cases included in this book, in which rat control or eradication is the undertaking of a particular organizational body for the most part, Los Angeles's approach to its City Hall rat problem has been diffuse, touching the jurisdictions of a variety of different bureaucratic departments and outside agencies. Deborah, an

employee I interviewed in the city's Department of General Services (GSD) described the scope of the city's response: "a number of different agencies, LAPD, L.A. Sanitation, the Mayor's Office, Personnel, Recreation Parks, City Attorney, Bureau of Streets Services, GSD, Housing, all of us were involved. We all had a piece of it and we just did our job." The city's Building Maintenance Division does have a contract with a private exterminator who carries out the parts of the job that most specifically fall under the banner of "rat control," but the way most of my interviewees from the City described things, the actual baiting and poisoning of the animals seems almost like an afterthought. The wide-reaching scope of the rat infestation and the number of different organizational bodies with no obvious ties to animal control involved in it hints at the sprawling significance of rats in the cultural imagination.

The city does have officials specifically concerned with rat control, including Mas Dojiri of the Department of Sanitation. However, Dojiri's position (Chief Scientist) is much wider in scope. In fact, when I asked him to describe his position when we first spoke, he listed several different duties ranging from monitoring pollution in LA's various bodies of water, to overseeing the proper disposal of industrial waste, before realizing that he had omitted his duties as a co-leader for the "rat abatement strategy for the entire city of L.A.," which was the reason we were talking in the first place. When he went on to describe this rat abatement work, he presented the practice of rat control as less a goal unto itself as a means to a different end. In fact, the beginning of this description bore little connection to rats period. He explained that when he began his current job, one of the things he was tasked with was managing an emerging public health crisis:

> Right after I got promoted to this position, we ended up having a hepatitis A … a little bit of a problem in the Skid Row area. … So, as Chief Scientist, I was in charge of making sure it didn't spread and that everybody was vaccinated who worked in the Skid Row area, etc. So, I worked with the [Los Angeles] Health Department on

> this and then we ended up training Orange County Public Health and San Diego Public Health on our cleaning protocols so that they could kind of follow suit.

Dojiri went on to explain how Hepatitis A is transmitted via “fecal oral pathway,” which means the most important areas of concern when it comes to prevention are food and water contamination. However, he explained, the Hepatitis A problem then gave way to a typhus outbreak in downtown LA., which necessitated a different kind of approach:

> Typhus has a vector. It’s not a fecal oral pathway. It’s a vector pathway. … The bacterium infects fleas, which are on the rats. And then fleas end up biting … mammals. And then and we end up getting typhus with this bacterium. So, we needed to control the rats.

As Dojiri describes it, controlling the rat population was a necessary measure for solving a problem that extended far beyond rats. In fact, he notes that, in terms of how people might actually come down with the disease, typhus is more closely linked to fleas than rats. Nonetheless, the actionable solution was to indirectly control the population of fleas, the true disease vector, by controlling their hosts, the rats. An urban outbreak of a vector-borne illness like this one can be understood as an “entanglement” of different forms of life, an ecological balance of humans, fleas, rats, the bacteria, and more, in the same way that Alex Nading (2014) describes the entanglement of people, mosquitoes, and dengue virus in Nicaragua. Whereas these forms of life are inescapably interconnected, visualizing the depth of this interconnection can be difficult. Both in terms of our lay conceptualizations of the typhus outbreak and, as Dojiri notes, the practical strategies for addressing it, the rat serves as a proxy for the totality of these entangled relationships. They both symbolically embody the threat of typhus and represent a targetable node to stop its transmission. It was notable, though, when asked about how he got involved in the rat abatement program, that Dr. Dojiri began not with typhus, but with Hepatitis A, a disease without the same material connections to rats. Nonetheless, for him it was a relevant piece in the narrative account of

his rat abatement duties. This is a good indication of how rats' symbolic associations with disease at large transcend even their actual role as vectors.

This looming symbolic capacity of rats was further demonstrated by the specific case of City Hall's rat problem. When our conversation turned to this topic, I was surprised by Dr. Dojiri's characterization of the issue:

> **Mas Dojiri:** It wasn't "rats" in City Hall. It was one rat.
>
> **Andrew McCumber:** Really? OK.
>
> **Mas Dojiri:** I think it was one rat, if I'm not mistaken. And they did a bunch of traps, they set up a bunch of traps and they didn't collect any. And they set up traps for the fleas and they didn't get any fleas in city hall either.

To hear this from an expert like Dojiri was intriguing, to say the least, given that my first introduction to this case was a February 7, 2019 headline in the *LA Times* that read "L.A. City Hall, overrun with rats, might remove all carpets amid typhus fears." Beyond this news coverage, public concern over rats in City Hall was enough to compel Los Angeles to initiate the multi-faceted response described by Deborah above, and to fill the agendas of multiple city council meetings with reports from expert employees on the problem and the steps taken to address it. The day after this headline ran in the *LA Times*, LA City Council President Herb Wesson Jr. introduced a motion that called for a number of different steps to address the problem and seemingly treated it as an urgent issue. The motion states that "there has been a noticeable increase in the volume of rodents in the area and within City buildings" and even makes reference to a flea problem in Wesson's own office, which it attributes to "the rodent issue." Upon introducing the motion during the Council's session, Wesson emphasized the need to "make sure that we, as quickly as possible, begin to make sure that our constituents and all of our staff feel safe." In short, both the media reporting on

the problem and the city legislators responding to these reports treated it as an urgent and verifiable problem.

When I expressed my surprise at this disparity, Dojiri explained it in terms of unfortunate circumstances that led to a distortion of the problem, remarking: “The problem is it was televised. I think it was in a councilman’s office and they ended up having some video on it, and so that video pretty much went viral.” He went on to note the claim made by a city attorney that they contracted typhus while at work in City Hall, suggesting that this provided a backdrop of public health concern that contributed to the notion of a rat infestation causing public alarm. Dojiri was not the only one of my interviewees with close connections to the issue that explained things this way. Ryan, an employee of the private pest control company contracted by the city to conduct inspections and other pest control services also felt that the problem had been exaggerated. He dismissed the outcry over rats, remarking simply “Media. It’s the media,” before going on to note, similarly to Dojiri, that “anytime you have something like that, like a claim of typhus from a city employee, … it's going to get a lot of attention. So that really escalated things.” Both Ryan and Dojiri see the worry over rats as primarily symptomatic of a broader atmosphere of fear related to typhus. Ryan, for his part, also added that the physical evidence of rats in City Hall was minimal, as his company had “gone through a complete inspection throughout City Hall. … We've done insect monitoring traps for fleas and rodents. But [the reports of infestation] just got a lot of attention.”

For comparison, the *LA Times* article where I first encountered the story of the infestation seems to suggest more concrete evidence than either Ryan or Dr. Dojiri implied there was. The piece begins like this:

> “At a Halloween celebration at City Hall last year, a rat gnawed through a pumpkin put out for decoration. In another incident, city workers found a dead rodent

> decomposing in an office ceiling. And then there were the rat droppings spotted on at least two different floors of the downtown building."

Upon returning to the article after conducting these interviews, though, I did notice how, after this initial paragraph, the descriptions of the rat problem are much less immediate. For instance, it returns to the Halloween pumpkin incident, describing how employees "discovered that a pumpkin had been 'gnawed out' by an animal" as opposed to actually catching a rat in the act. It then goes on to describe another more indirect rat encounter, wherein someone "saw the tail of a rat as it scurried behind her couch in her office."

As a sociologist and a cultural analyst, my intention in noting these discrepancies is not to attempt to adjudicate the validity of either side's claims. Rather, the very uncertainty over the scope of the rat problem suggested by these wildly varying accounts is itself indicative of this story's capacity to capture the public imagination. Whether material reality, cultural myth, or both, the idea of a rat-infested City Hall is uniquely symbolically compelling given rats' larger potent associations with disease. Understandably, people like Dojiri and Ryan, whose job it is to control the rat population, are focused primarily on the verifiable, material presence of rats. The descriptions in the LA Times, though, in which rats always remain just out of sight but leave behind unnerving traces like bite marks on a pumpkin, evoke a more generalized sense of discomfort and looming potential danger that transcends the animals themselves. Whatever the true extent of the infestation, the rat nonetheless stands in as a symbolic icon representing this uncomfortable feeling that something is not right. In the months after the initial reports of infestation, the rat took on an even broader symbolic association with dysfunction and disarray; a political demonstration installed a giant inflatable rat outside City Hall, which functioned as a double entendre for the animals themselves said to have infiltrated the building's physical walls and for corruption in City Government.

Viewed in these terms, as a cultural phenomenon, City Hall's rat infestation was an event through which the public made sense of a complex urban ecology and its intersections with the surrounding social dynamics. Rats are cultural metonyms for disease, and the notion of a rat infestation is a perfect embodiment of a larger health issue like the typhus outbreak and the struggles to contain it. City Hall, of course, is itself a metonym for local governmental power and authority, which further heightens the symbolic power of the narrative of infestation. In his remarks at the City Council meeting where the abovementioned motion was introduced, councilman Wesson makes clear the symbolic associations with disease that rats carry, and in doing so evokes the ominous atmosphere these associations can generate amid reports of infestation. "There has been a lot of speculation [related] to typhus," he remarked, before continuing "there has been a lot of speculation [related] to the types of *uninvited guests* that we might have in this building and throughout the Civic Center complex" (emphasis added). Of course, the urban ecology that rats stand in for contains more than just animals, city landscaping, and pathogenic bacteria. The next section deals in more depth with the human involvement in these relationships to reveal how power dynamics and urban inequality are the subtext of rats' metonymic symbolism.

Managing the Inside/Outside Divide

Clad in high visibility orange vests on a Saturday morning, we sat in a pickup truck on Main Street, between 1st and Temple, periodically checking our phones and waiting to be cleared to begin the day's work. I was accompanying a crew of workers from Los Angeles's Department of Sanitation on a weekly cleaning of the Civic Center, the section of Downtown LA home to the complex of buildings that makes up City Hall. These cleanings began as part of the City's multi-faceted approach to the City Hall rat infestation, to

contribute to making the area a less inviting habitat for the rodents. It was already 15 minutes past 7:00 AM, the hour the cleaning was scheduled to begin, but we were not checking our phones for the time, or even for a text message or other outside communication giving us the go-ahead. Each of us were checking our phones' weather app. The forecast was for clear skies with a typical mid-February high to make most of the country outside Southern California jealous, but at that moment the temperature sat stubbornly at 49 degrees. That number would have to hit 50 before we could begin, a protocol put in place for the protection of the city's unsheltered residents who would have to be roused for the cleaning to proceed.

The area of Los Angeles most associated with its homeless population is Skid Row, which is located a few blocks away from the Civic Center, but in recent years the presence of tents and other makeshift shelters has grown increasingly prominent here, outside City Hall. The main goal of the Saturday cleanings is to mitigate the physical effects the phenomenon of people living outdoors has on this portion of the urban landscape. For the cleaning to proceed, anyone taking shelter in the area must at least temporarily relocate. In addition to the temperature, we are also waiting for representatives from the Los Angeles Homeless Services Authority (LAHSA), which is run by LA County and not by the city. LAHSA is supposed to make "first contact" with unsheltered residents and make them aware of public services available to them, but they have not shown up and no one in our group has been able to get in contact with them. Eventually, a police car drives by and announces over its loudspeaker that the area is scheduled for cleanup, and that anyone in the vicinity has 15 minutes to move. I am told that this announcement clears us to begin in lieu of LAHSA's arrival (which ultimately never happens). We wait a while longer as a man

emerges from his blue tarp tent, which he collapses and carries off down the street. A few others pack up to leave as well.

These cleanings are a central piece of the city's attempt to exert control over the spatial dynamics of the Civic Center complex in response to the reports of rat infestation. Whereas rats embody illness, infection, and danger and mark the urban spaces they claim with these same associations, the work of the Sanitation Department reclaims these spaces and subverts those meanings. They do so by materially managing the landscape, altering its conditions so as to physically expel rats. The presence of homeless encampments in the area is a key factor for this city effort in that they present specific obstacles for sanitation work and highlight the social politics of space within which this work implicitly takes place.

When the area has been cleared of people, the Sanitation team goes to work inspecting the visible remnants of the encampments. Most of the cleanup is simply clearing fairly benign debris, garbage strewn about the concrete. Some areas require more specialized attention though, when they are deemed to contain hazardous materials. A small contingent of our group charged with managing these materials is dressed in stark white suits that offer more protection. For instance, early on, someone spots a pile of trash from one of the vacated encampments with still-loaded hypodermic needles. The more common hazardous material, though, is urine and feces. We encounter these often enough that for the duration of the cleaning I consistently am reminded of a community swimming pool by the chlorine solution the crew sprays onto the concrete in these cases. The crew frequently refers to a specific planter as the "bathroom," citing their consistent weekly experiences removing excrement from it. This particular part of the job is noteworthy, as the presence of human excrement is one thing that experts specifically pointed to in their assessment of the area around City Hall as a factor for increasing the threat of rat infestation. I am able to observe

the important shift in the area's material conditions (from hospitable to rats to not) with my eyes closed, as a nauseous olfactory landscape gives way to the sterile smell of chlorine.

After making our way through the area immediately surrounding the entrance to the City Hall East building on Main Street, we descend a staircase to a courtyard situated below street level. There is not nearly as much garbage or other, potentially hazardous debris plainly visible here, but there are a few small piles of what look like personal belongings, presumably left behind by people who vacated after the police made their announcement of the cleaning. There is also one man still sleeping on a bench. Miles, a supervisor of our crew tells me that technically we should ask him to leave, as the area is supposed to be closed to the public during the cleaning, but since "he's not bothering anyone" we do not this time. On another bench across the courtyard sits a small knapsack. The protocol with items like this is to determine whether or not it is hazardous, and, if it is determined not to be, it is put in storage and replaced with a note indicating the facility where its owner can pick it up. Wearing plastic gloves, George, a member of the Sanitation crew opens the bag up and immediately makes his judgment. "Oh yeah," he says, "the second I opened it up I could smell the mold." This is one of the more common reasons belongings like this are determined to be hazardous. The bag will have to be thrown out.

As is clear from this cleaning protocol initiated after the reports of city hall's rat infestation, the response to this problem is inherently tied to the city's policy on homelessness. The connections between these two concerns are both practical and symbolic. In general, what the department of Sanitation must do for the ultimate goal of preventing rats from taking up in City Hall buildings is remove the physical effects of people living outside. A rat infestation like the one reported in City Hall can only be understood in terms of the urban ecology that provides the necessary conditions for it. In this case, a major factor

in that ecology is the presence of human beings living on the street. Thus, the necessary maintenance to prevent rats from breaching the walls of these buildings involves regularly removing the remnants of the area's unhoused population, which include garbage, human waste, and (potentially hazardous) personal belongings. From a symbolic standpoint, removing these visible remnants and managing the material conditions of the urban ecology simultaneously marks the area as safe and ordered. When Councilman Herb Wesson urges that city employees need to feel safe when going to work, it is, in part, the work of the Sanitation department to physically generate these associations for this building complex, by removing the atmosphere of looming danger that rats carry with them.

The connections between homelessness and the response to rat control also must be understood in terms of the spatial dynamics of city life, as ordered along the dualisms mentioned earlier in this chapter (society/nature, healthy/unsafe, etc.). Specifically, the work of cleaning the area around the Civic Center for the purpose of preventing rats is fundamentally an effort to ensure collective faith in the basic, but crucial threshold separating "inside" from "outside." The material motivation in this regard is clear, as it is aimed at preventing rats from entering City Hall buildings by maintaining the necessary ecological conditions surrounding it. Much like the nature/society divide, the distinction between inside and outside is, in reality, more fluid than our typical understanding of it. In fact, some human geographers have explicitly called for greater attention to indoor environments as "active political-ecological spaces" (Biehler and Simon 2010). Dawn Biehler (2013; 2010) in particular notes the capacity of urban pests, including rats, to disrupt taken for granted notions of "public" versus "private" by permeating the indoors. The call for more scholarly attention to the indoors mirrors, in some ways, UPE's efforts to transcend the nature/society divide and especially Angelo and Wachsmuth's (2015) attempts to do so

by fundamentally retheorizing urbanization as a socio-natural process that extends well beyond the city center. Biehler and Simon (2010:186) see the indoors not simply as an as-yet underexamined "discrete object of analysis," but instead emphasize that its importance lies in its "[connections] to broader social and ecological systems." They suggest, therefore, not that scholars should "aim solely to describe human-environment interactions indoors," but rather that the indoors are important for understanding the totality of human-environment relationships more broadly (Biehler and Simon 2010:186). Just as is the case with the nature/society divide though, the indoor/outdoor divide is, on the one hand, an obstacle to overcome for social scientists to enrich their analyses of urban spaces, but is also, simultaneously, a meaningful distinction and organizing principle for urban practices with real and important social implications.

In other words, the City Hall rat issue certainly reveals the permeability of the boundaries separating indoors from outdoors, and thus the inherent ecological interconnections between the two, but the notion of a clean separation is nonetheless a crucial motivator for the response to the problem. Unlike Alberta and the Galápagos Islands, in Los Angeles, no one has any illusions about eradicating rats completely. Downtown LA will likely support a robust population of rats as long as its human population remains. Instead of a political border or the coastline of an island, then, the most important spatial boundary for the project of rat control here is this threshold between inside and outside. Rather than envisioning a rat free LA, the city is invested in a rat free City Hall. Preserving the meaningful inside/outside distinction means managing the elements of the urban landscape that transgress the popular conception of it. As discussed in the previous section, rats are metonyms for disease and danger, and so maintaining the appropriate inside/outside distinction means keeping the inside safe from those associations. The looming sense of

unease and the ominous atmosphere of danger associated with the notion of a rat infestation is the result of a transgression of this boundary, where rats materially and symbolically bring the outside in.

The work of the Sanitation crews, as well as the work of other departments like Parks and Recreation, to transform the landscape immediately surrounding City Hall is an effort to seal these important boundaries, to make the inside less permeable. This means materially removing the conditions in which rats thrive, but symbolically it involves removing the visible disorder of debris and scattered belongings and replacing the scent of human waste with that of sterile chlorine spray. This visible disorder, on the other hand, is itself a representation of the frayed division between indoors and outdoors not only because of the habitat it provides for rats, but because of the inverse spatial transgression of homelessness. Whereas a rat problem brings the outdoors inside, human beings forced to sleep in tents on the sidewalk, use planters as restrooms, and store personal belongings in shopping carts represents what is properly confined to the inside visibly spilling out where it should not. While the weekly relocation of homeless encampments for cleaning is necessary for the project of rat control, it also removes the visible remnants of the phenomenon of homelessness. Both of these, rat control and the maintenance that homelessness necessitates, are part of the overarching mandate to preserve faith in the spatial division between inside and outside.

Conclusion

This chapter has used the case of LA's City Hall to examine the symbolic and spatial roles of rats and rat control within the broader socio-environmental process of urbanization. Nature, on the one hand, has become an increasingly central part of the creation of a positive urban experience, to the extent that parks, trees, and other landscaped plant life is

overwhelmingly seen as providing social benefits and generally increasing city dwellers' quality of life. This imagination of urban nature, though, is dependent on the persistent notion of a nature/society divide, and a corresponding spatial order that allows these benefits of nature into cities while keeping at bay the deleterious effects that the nonhuman world may pose. The case of LA's City Hall rat problem illustrates this effectively. Rats are metonyms for the dangers of dirtiness and disease, a bad kind of nature that must be managed. The project of rat extermination exerts control over the spatial dynamics of city life by affirming an important ontological boundary between the inside and outside, sequestering rats and their insidious cultural meaning to the latter half of this binary, and thereby securing the comfort and safety of the inside.

The project of rat control in LA, as we have seen, is inescapably tied to the phenomenon of homelessness. In one sense, these phenomena are materially linked, where the social conditions that relegate a sizable population to living on the streets generates material conditions that make rat infestations probable. Symbolically, they represent inverse transgressions of the inside/outside divide, where rats bring the dangerous ills of the outside into indoor spaces and homelessness represents an inappropriate spillover of inside life onto the sidewalk. Accordingly, the rat control efforts of the city, including the weekly cleanings by the Sanitation Department, are invested in addressing both these issues simultaneously. Moreover, these two issues, the rat problem in city hall and Los Angeles's homelessness and housing crisis, are deeply intertwined in the public imagination.

Chapter Four

Ecologies of Meaning in the Galápagos Islands

Most people who visit Floreana Island depart from the Galápagos Islands' main population center, Puerto Ayora on Santa Cruz Island. The trip is two hours roughly due south by boat, in my case a small vessel called the Queen Astrid that was near its maximum capacity carrying me and six other passengers and at times seemed utterly overmatched by the choppy waters of this stretch of ocean. Travelers disembark at the dock of Floreana's only population center, Puerto Velasco Ibarra, a small grid of volcanic gravel roads where they will find the island's few hotels and restaurants as well as its tourism center. Most visitors then board trucks operated by travel agencies for group tours, which are small semis with hollowed out, side-less trailers fitted with wooden benches. After reaching the island myself, I met Jorge, a Floreana local who works for Island Conservation, the NGO that has partnered with the Galápagos National Park to plan the ongoing effort to eradicate rats and feral cats. We climbed aboard Jorge's motorbike and followed the tour trucks up the road to the highlands of the island.

The ride was a short one, but the journey nonetheless amounted to a dramatic transition. As we climbed the steep dirt road, I felt the air get thicker against my skin and the temperature rapidly dropped several degrees. The vegetation shifted accordingly, from sparse shrubbery reminiscent of the hiking trails in the semi-arid climate of my hometown, Santa Barbara, California, to a dense, green landscape befitting the heavy, humid air. We spent the rest of the day visiting a number of different construction sites, some completed, some in progress, where structures would house livestock or native animals during the duration of the planned poisoning program. We never came face to face with a rat during

this tour, yet, touring these construction projects, the imprint of this arena in humanity's worldwide struggle against the rodents was evident.

In many ways, some glaring and some much more subtle, the frigid, snow-covered Albertan prairie and this verdant equatorial climate where we will spend this chapter provide a contrast that makes for ideal (literal and metaphorical) bookends to this exploration of rat control. The obvious contrasting ecological, aesthetic, and cultural contexts of these two places make for disparate conditions in which their shared project of extermination takes place. Of course, a key difference is one of underlying motivating factors (economic calculus versus environmental conservation). Another key difference, though, is the respective statuses of rats, both in the ecologies of both contexts and in their cultural imaginations. Whereas rats are famously absent in Alberta, yet loom large in the collective imagination there, in the Galápagos they could be said to occupy the inverse of these statuses. Rats are very much present, in a real, material sense, acting as troublesome agents in the islands' ecosystems for the environmentalists who hope to eradicate them. Yet, as cultural objects, they are far less individually salient here, buried beneath a sensory overload of other animal iconography devoted to iguanas, seals, myriad native bird species, and giant tortoises, and physically hidden in burrows beneath the lush landscape of Floreana's highlands.

Accordingly, it may have been rats that brought me to the Galápagos Islands to begin with, just as they brought me to Alberta and to Los Angeles, but understanding rat control in this context requires a special attention to the cultural meanings of other animals as well. In this chapter, I emphasize this fact by taking a relational approach to the animals that make up the diverse ecology of the islands, one that understands them, as cultural objects, in terms of each other. The species eradication programs in the Galápagos that attempt to conserve

the habitats of native animals bring these important relationships to the foreground. More than that, they also reveal the extent to which we turn to animal species to make more coherent sense of the morally inflected, overarching set of values that structure our relationships to the environment.

This is because, in the Galápagos, the story of rat extermination is a story about nature, through and through. It is nature, more than anything else, that brings hundreds of thousands of tourists to the islands each year through the gates of Seymour Airport on the tiny island of Baltra, and nature that sends them fanning out from there throughout the archipelago, on day trips and guided tours, to bear witness to a variety of ecological spectacles. And it is this same nature that environmentalists are hoping to protect by systematically exterminating rats. Despite the ritualistic, deeply affective, and even spiritual character of the pilgrimage that so many make to see the nature of Galápagos, conversations about nature, and especially about protecting it, tend to rely heavily on appeals to scientific rationality and to define the ecological greater good in these seemingly detached, unemotional terms. At the heart of any discussion about conservation, though, lies a value system based fundamentally on shared cultural meaning. In this chapter, the project of rat eradication, and invasive species eradication more generally, serves as a window into this value system, and through examining it I attempt to bring more clarity to the role of cultural meaning in environmental conservation. As we will see, the story of rat control being a story about nature means that the story of rat control is a story about tortoises, snakes, mockingbirds, chickens, cows, and, of course, human beings, and what kind of comprehensive whole they all make up as component parts.

In the rest of this chapter, I will examine how those involved in species eradication programs understand their work in relation to the cultural meaning surrounding the

Galápagos Islands, the species at the center of the projects, and nature and the environment more broadly. I argue that species eradication programs intervene in two overlapping and interconnected ecologies: the physical, material ecology and what I refer to as the "ecology of meaning": the web of meaning and significance that structures how we relate to the nonhuman life in our proximity. This concept allows us to see both how elements of ecologies, like individual species of animals, become salient cultural objects and how those piecemeal significations combine to generate broader ideas of "nature," much the same way that the material ecology is composed of a web of relationships and interactions between individual organisms. The following sections introduce the theoretical framework of the ecology of meaning and position it within relevant extant scholarship on culture and the environment. I then examine the case of species eradication on the Galápagos Islands, including the current rat eradication on Floreana as well as the history of past eradication programs of different species in order to probe the relationship between individual animals as meaningful cultural objects and more holistic cultural ideas of nature. These overarching ideas of nature are potent motivations for species eradication work, but these ideas are most clearly articulated in reference to the symbolic meaning of *individual* animals.

Moreover, these ideas are negotiated through discourses surrounding two ethical questions that guide conservation work. The first of these is the question of acceptable environmental change: who or what can be a legitimate agent of change in an ecosystem? This discourse is especially salient for conservation work in the Galápagos because the islands are iconic for their association with Darwin's theory of evolutionary change, and also because the scale of these conservation programs makes them significant human interventions in an ecosystem's balance of life. The second is the related question of whether it is justifiable to use killing as a tool for environmental conservation. For many, the method

of species eradication runs afoul of the underlying impulse to preserve life rather than extinguish it that is, for many, central to environmentalism. When is killing necessary, and what does the negotiation of this question reveal about the nature to be saved, as conservationists imagine it? Together, these specific questions serve as a net in which we might capture more nebulous yet potent cultural discourses, offering a better understanding of the nuanced relationship between the materiality of ecosystems and their place in the cultural imagination.

Animals, Nature, and Meaning

While endangered species conservation is most obviously an environmental problem, this chapter examines how it is in equal measure a cultural problem. This requires mediating between the notions of nature and culture to piece apart their complex and often contradictory relationship. If we are to believe Raymond Williams, who wrote a great deal about both of these concepts, this is a particularly onerous task. Williams famously wrote that nature is “perhaps the most complex word in the language” (1983:184), while describing culture as “one of the two or three most complicated” such words (1983:76). If we accept Clifford Geertz’s (1973) famous definition of culture as a “web of significance” and meaning that provides the texture to social life that makes our experience of it intelligible, then as researchers we are faced with the sometimes daunting challenge of reconstructing the pieces of that web necessary to understanding the phenomena we study. Sociologists working in this register have emphasized the ubiquity of culture by characterizing it as a “strong” (Alexander 2003; Alexander and Smith 2001) or independent variable that must be explained “endogenously” (Kaufman 2004) rather than viewed as an epiphenomenon of other social processes. This presents unique problems for observation, as

culture threatens to become an indescribable “amorphous mist” (Ghaziani 2009) when we locate it in nearly every aspect of social life.

Whereas this means sociologists must distill this cultural “mist” into more discrete and manageable units of analysis where meaning consolidates in a given arena of social life, environmental sociologists must locate and describe this process specifically in relation to the material, nonhuman world. A major preoccupation in this respect has been examining the ways in which nonhuman animals function as vectors for symbolic meaning in cultural life. Contemporary scholarship in this area is descended from the observations of Emile Durkheim (1912) and later Claude Lévi-Strauss (1963) of the role of animals as religious “totems” in consolidating social life. Jerolmack and Tavory (2014), for instance, argue that animals function as “everyday totems,” gathering the kind of social meaning that these earlier scholars described without necessarily being the subjects of religious practice. Other scholars have shown how animals become symbolic analogs for parallel social conflicts (Fine and Christoforides 1991) and how differential experiences with animals generate different environmental attitudes (Angelo 2013) among others. David Pellow (2016, 2017) provides important insight into the cultural weight of animals and their influence on social life with his concept of the “social discourse of animality,” or the phenomenon in which animal references police the borders of acceptable human and nonhuman behaviors and identity, meaning moral hierarchies along lines of species discursively reinforce the structure of *social* hierarchies such as along lines of race.

Other sociological work has taken a different approach in focusing on animals by examining their capacity to influence social life materially, as opposed to symbolically. For instance, York and Mancus (2013) argue for a retheorized account of Ecological-Evolutionary Theory that centers on the role of animals by demonstrating their historical

importance in shaping the development of agriculture and the patterns of its transformation of human society. In a similar vein to this macrosociological perspective, others have attempted to deeply incorporate various nonhuman elements as meaningful players in the narratives of environmental ethnography. These scholars borrow concepts from ecology and Actor Network Theory to highlight the ways that human social structure is inextricably connected to, or materially "entangled" with the natural world, as opposed to examining nature primarily as a symbolic object. For example, Alex Nading details how the dynamic relationships between humans, mosquitoes, and dengue virus conspire to dictate the social definitions of health in Nicaragua (2014). This work shifts the object of analysis from people and social institutions, to multispecies relationships called "assemblages" (Lorimer 2015; Ogden 2011; Tsing 2015) that combine social structure and the animals, plants, fungi, microorganisms, and landscapes in its midst.

These attempts to place human society within this broader, ecological context affirms the biophysical environment as a legitimate explanatory factor for social phenomena, which is the central tenet of environmental sociology. Early environmental sociologists, in arguing for the legitimacy of the subfield within the broader discipline, charged that sociology had, to its own detriment, reified an artificial ideological "divide" between nature and society, stemming back to the Durkheimian notion that social facts be explained only by other social facts (Catton and Dunlap 1980; Murphy and Dunlap 2012). Since then, a major preoccupation of this work has been analyzing this so-called "nature/society divide" by examining how cultural meaning shapes our understanding of the category of nature. Some of this work proceeds from a symbolic-interactionist framework, such as Gary Alan Fine's ethnography of amateur mushroomers, in which he argues these meaningful interactions with the nonhuman world generate one's environmental worldview,

a concept he calls “naturework” (Fine 1998). Michael Bell (2018) takes a sweeping historical look at the development of nature as a separate category and argues that it developed not with the rise of industrial urbanization, but with the earliest forms of city building and the transformations of social structure they brought. These analyses build on a body of interdisciplinary work that has identified how nature is nearly always conceived of as external to the world of human affairs but simultaneously as having beneficial, even life-giving properties (for a few examples, see Buell 1996; Cronon 1996; Soper 1995; Williams 1980).

To sum, these various pursuits within scholarship on society and the nonhuman environment reveal 1) how cultural meaning-making renders animals and other nonhumans important symbolic objects in the organization of social life; 2) how these nonhumans influence social life in another, more material sense, as social life exists within and is shaped by webs of multispecies ecological relationships; and 3) how “nature” at large is a potent cultural object in its own right, and in this sense represents a sort of totality of the meaning we ascribe to the biophysical environment. My goal in the rest of this chapter is to outline a theoretical framework that I call *ecologies of meaning*, which charts important connections between these, in order to more clearly understand the relationship between cultural meaning and the environment. More specifically, I will examine the role that the construction of nonhuman animals as cultural objects plays in generating more holistic environmental worldviews and ideas of “nature,” and how the materiality of our relationships with animals factor into this process.

Species Eradication and Ecologies of Meaning

Species eradication programs, such as those in the Galápagos, provide an ideal lens through which to examine the interplay between materiality and meaning, and between the

symbolic meaning of animals and more holistic ideas of nature. These projects are motivated by overarching discourses of nature and what makes it "good," but they put those notions into action by targeting individual species for protection or eradication. Furthermore, by intervening to affect the balance of life in an ecosystem, they are fundamentally invested in maintaining the material conditions under which the animals and ecologies in question can carry the meaning with which they have been invested as cultural objects.

The method of invasive species eradication for conservation is used in many parts of the world, but especially on islands, where relative isolation makes it more feasible. The Galápagos Islands are an ideal site to examine this conservation method from a sociological perspective given how iconic they are for their nature and nonhuman life. Also, the islands were home to one of the most well-publicized and controversial species eradication programs to date between 1997 and 2006. Referred to as "Project Isabela," this was an eradication of goats to protect tortoise habitats. It was emblematic of the tensions surrounding eradication as a method of conservation, as it was controversial for its extreme tactics: female goats termed "judas goats" were sterilized, given hormone injections so as to attract as many males as possible, and fitted with radio collars to lead conservationists to groups of the animals. A sharpshooter following in a helicopter would then shoot these goats dead, sparing only the "judas goat" so as to repeat the process again. Detractors were critical of the program's brutality, with some objecting to the killing of the goats period.

The organization Island Conservation is now aiming to eradicate rats along with feral cats on Floreana Island to save native bird species as well as to potentially reintroduce other animals that once lived there but no longer do. The organization is more broadly dedicated to conserving native species on islands primarily through the eradication of invasive species and has programs in locations across the Pacific and Atlantic Oceans as well as the

Caribbean Sea. They have partnered multiple times with the Galápagos National Park and the Galápagos Conservancy to assist in performing eradication programs on various islands in the archipelago. When I visited in December 2018, Project Floreana was several years in, though "implementation," or the beginning of the baiting and poisoning phase of the program was then still multiple years away. The project faces unique challenges that help to foreground the tensions between nature and culture under analysis, as it is the first rodent eradication program of this scale on an island with a significant permanent human population.

To analyze this project of species eradication, I employ a framework that uses (and appropriately expands) concepts from the study of material culture. Recent scholarship in cultural sociology has examined the conditions under which material objects are integrated into the symbolic arena of social life, or how and why they do or do not become "resonant" 10/11/21 3:53:00 PM. For instance, McDonnell investigates HIV/AIDS media campaigns in Ghana and the frequent and troublesome dissonance between those campaigns' intended meanings and how they are received by their audiences (2010, 2014, 2016). Condoms become repurposed as fashion accessories, the intended messages of dilapidated billboards are covered up by fliers, and the red dye of HIV/AIDS awareness ribbons fades in sunlight, transforming them into pink breast cancer ones. With these examples, McDonnell demonstrates the dynamic and delicate relationship between materiality and cultural meaning, a relationship captured by his term "cultural entropy," which he defines as "the process through which the intended meanings and uses of a cultural object fracture into alternative meanings, new practices, failed interactions and blatant disregard" (McDonnell 2016:26). The fraught relationships between materiality and meaning described here are especially applicable to plants and animals, whose existence independent of the human

regimes of meaning-making they participate in make them especially "unruly" (Domínguez Rubio 2014). The "environment" essentially comprises a special category of material object in the popular cultural imagination, defined by an assumed autonomy of sorts from the human social world. This ontological separation notwithstanding, elements of the natural world function as cultural objects in essentially the same way that material culture like pieces of artwork or consumer products do, as described by scholars of material culture.

Building on these approaches, I use this lens of materiality as an analytical wedge to provide insights into the different scales of meaning-making around the biophysical environment. To this end, I examine the case of species eradication in terms of two overlapping ecologies, the first of these being ecology in the normative sense, or the material web of physical interactions, dependencies, and territorial overlap. The second I refer to as the *ecology of meaning.* This latter ecology encompasses the systems of shared meaning that shape our attitudes and assumptions about the nonhuman life in our proximity. In other words, the ecology of meaning represents our capacity to construct "the rat," for example, in our collective cultural imaginations as a figure that exists somewhat independently from the materiality of rat bodies and lives themselves. This concept calls attention not just to species of animals as cultural objects, but to the relationship between those cultural objects and how they add up to a comprehensive cultural understanding of the nonhuman environment.

This approach builds in particular on the work of Fernando Dominguez Rubio, who argues for an "ecological" approach to the study of material culture, by which he means one that focuses on the "processes and conditions" under which material things may become vectors of meaning (2016). He further highlights the ephemerality of these relationships, noting that the materiality of things is in constant flux, and so too are their capacity to hold

specific meanings. Dominguez Rubio makes an analytical distinction between "things," which he defines as "material processes that unfold over time" and "objects," which are "the positions to which those things are subsumed in order to participate in different regimes of value and meaning" (2016:61–62). To think about material culture and meaning "ecologically" then, is to analyze the relationship between things and objects, or the conditions under which things can function as objects.

I apply Dominguez Rubio's approach in this chapter to specifically environmental topics and expand what is meant by "ecology" accordingly. In one sense, the ecology in question is metaphorical in the ways suggested by Dominguez Rubio, but it simultaneously refers to ecology in the traditional, literal sense. In other words, whereas a material ecology is made up of its component parts and the totality of the relationships between them, I intend to show that the cultural meaning of that ecology is also composed of meaning on the smaller scale of individual cultural objects. Dominguez Rubio's approach is useful for examining the capacity of certain species to function as cultural objects, but in applying and expanding this framework, I show how that meaning making generates more holistic, overarching understandings of nature and the environment.

Our relationships to nonhuman environments are best understood in light of both the delicate balances of material ecologies and the equally delicate balances of ecologies of meaning. Moreover, when it comes to our interactions with the physical environment, the conditions of these two ecologies are inextricably linked. In other words, when human intervention impacts a biophysical landscape, it necessarily affects the material balance of life there and the meaning those lifeforms carry or are capable of carrying, their "resonance" (Kubal 1998; McDonnell 2014; McDonnell, Bail, and Tavory 2017; Robnett 2004) as cultural objects. Thus, when a conservation program acts to protect a certain species, it

makes simultaneous and parallel interventions into the material ecology and the ecology of meaning. Understanding conservation programs in these terms allows us to see how the project of environmentalism itself is implicated in much broader regimes of ethics and morality that extend well beyond typical notions of what constitutes an “environmental” issue. The stakes of species eradication programs are thus not simply which species should be given special protections and which ones should be erased from a landscape, but the related notions of who and what is deemed venerable or expendable.

As I will show, two central cultural discourses of concern to conservationists are the question of acceptable versus unacceptable environmental change and the question of whether extermination is an ethically justifiable tool for conservation. The negotiation of these questions functions as a distillation of a broader and messier cultural value set associated with “nature.” Probing these areas of negotiated meaning will provide an index into the connections between animals as cultural objects and overarching notions of nature that make up the ecology of meaning.

Static Symbols of Change: The Relative Autonomy of Animals’ Cultural Meaning

While the Galápagos Islands are themselves emblematic of unfettered nature and brilliant diversity of life, some particular animals serve as the most recognizable cultural avatars of that nature. These include birds like the famous Galápagos finches, who boldly perched next to my plate on the lunch table during my stay on Floreana Island, the Frigatebirds, whose males are instantly recognizable by their inflatable red gular pouches, and the eccentric blue footed boobies, whose otherworldly appearance and silly sounding name inspire a robust market of PG-13-rated souvenirs. Other endemic species like marine iguanas, lava lizards, and fur seals all captivate audiences of tourists as well. These animals are the all-star cast of characters in the ecological theater that the Galápagos Islands are

stage to. The tourists I encountered while visiting the islands tended to talk about their visits specifically in terms of the animals they hoped to see. One traveler who boarded the tiny boat to Floreana Island with me told me he was making the journey “because he wanted to see a penguin.” On a day trip to North Seymour Island, a “birder” couple listed the avian species they hoped to add to their lists there.

It is unsurprising then that many conservation efforts in the Galápagos, including species eradication programs, tend to revolve around individual species. The symbolic cultural meaning that these animals carry is deeply bound up in the moral discourses of environmentalism. Protecting particular animal species is the most tangible way to operationalize the affective and moral impulses of an environmentalist ethos which, when taken more holistically, become much messier and fraught with contradictions. Often during my interviews with species eradication practitioners, interviewees affirmed the overarching importance of saving endemic species, even if they ultimately acknowledged that the basis for this was a value judgement as much as a rational truth of ecological science. For instance, Chris, an organizer of Project Floreana for Island Conservation discussed the position some opponents of species eradication take, that killing introduced species to save others is a recklessly arbitrary decision and even one that amounts to “playing god” in the ecosystem. “Yeah, they've got a valid point,” he acknowledged, but remained firm that “when it comes down to it, we're not embarrassed to say we value an endemic species more than an introduced species that isn't at risk of going extinct.” Though some vocal opposition exists, especially from animal rights groups who object to the brutality of species eradication methods and even more generally to the use of killing as a tool of conservation, the value Island Conservation places on endemic and native species is widely shared and their efforts have been widely supported.

Another interviewee, Brian, a pioneer in the field of species eradication who I spoke to in advance of my trip to the islands, humorously demonstrated the extent of this cultural value favoring native animals. He warned me to pack a flashlight for my trip to the islands in case of power outages, lest I risk getting out of bed in the dark and having a run-in with a particular species of centipede. After he detailed the unpleasant effects of their poisonous bite (not fatal, thankfully, but "after the second day of fever you'll *wish* you were dead"), I joked that maybe Island Conservation could eradicate them as well. He dismissively said "well, they're native," though he then further emphasized the terror they inspire: "Oh they're so scary. Remember all the shit that was coming out of the canyon walls in King Kong? It's like that." Surely these centipedes are not what comes to mind for most when they picture the iconic wildlife of the Galápagos, but Brian's distaste for them comes across as more of a respectful terror compared with the disdain he expressed in other parts of our conversation for the rats and goats that are the targets of eradication.

The distinction between "native" and "invasive" species is a fraught one, as noted by scholars who have examined how this binary elides the many nuanced relationships a species might have to a place and its ecosystem (van Dooren 2011; Ogden 2018) and others who have noted that the very practices that threaten endangered animals can be instrumental in producing the environmental knowledge necessary to identify their precarity (Scoville 2019). For species eradication practitioners, the moral basis for their conservation programs puts the terrifying Galápagos centipede in the same category as the Galápagos tortoise (as native wildlife to be preserved), but the tortoise is of course a much more charismatic figurehead for these efforts. Just as they are protagonists of tourists' encounters with nature, they are also the sympathetic protagonists of projects like the goat eradication on Isabela Island. In this way, these charismatic animals function as important cultural objects in ways

that transcend their material existence. Of course, it is impossible to completely decouple animals' cultural meaning from their materiality, and this is uniquely true in the Galápagos Islands, where these visible animals are symbols of the broader ecological processes they exist within. Nonetheless, animals' cultural meaning remains relatively autonomous from their materiality in ways that expose tensions in the relationship between the two.

Arguably, the concept of change, more than anything else, is what makes the Galápagos Islands and their animals as iconic as they are and is at the center of the moral ethos that privileges native animals over introduced ones. Tourists flock there to see an abundant and thriving ecosystem up close, but that ecosystem's special allure stems from its enduring association with Charles Darwin's research there and his theory of evolution that it inspired. Darwin's legacy is palpable during a visit to Galápagos, from the businesses in Puerto Ayora and souvenirs that bear his name or likeness, to the town's main drag named Avenida Charles Darwin. As one of the animals most closely associated with Darwin's legacy (it even provides the logo for the Charles Darwin Foundation), the Galápagos tortoise is potently symbolic of the adaptive change that is possible through evolution and natural selection. This association comes from observations of the physical differences that have developed in tortoises on different islands according to the specific conditions of the landscape. As a result, the tortoise has become a cultural metonym for the *idea* of evolutionary change and its cultural significance.

While the tortoises themselves may be involved in a long-standing and ongoing process of evolutionary change, their status as symbolic objects *representing* that change is static by comparison. Species eradication programs throw this tension into relief. By tinkering under the hood of an ecosystem, they strive to maintain the material conditions under which the tortoise retains its resonance as a cultural symbol of evolutionary change,

though at some level this inherently alters the unfettered quality of natural selection that is central to those conditions under popular ideas of nature.

This points to the importance of cultural meaning as a driving force behind species eradication, and to that meaning's messy relationship with materiality. Species eradication practitioners often express their motivations for conserving species like the Galápagos tortoise in terms of preserving the material process of evolution itself. As Brian expressed it, if one of these species were to die out, it would represent a loss on a higher order:

> "You're not only losing species, … you're stopping evolution in its tracks in that system. Because once you lose a species, that unique genetic combination is gone."

Species eradication programs are not just attempting to save species, they are attempting to protect the integrity of evolution itself, which should not be compromised by forces like human economic activity or the spread of introduced species that comes with it. This amounts to a cultural negotiation of acceptable versus unacceptable environmental change, wherein humans can be legitimate agents of change insofar as they are acting to preserve a specific imagination of the material landscape. In a sense, more than preserving evolution itself, the driving cultural impulse behind conservation programs is to preserve the *iconography* of evolution, or a temporal snapshot of Galápagos and its species as they were when they inspired the theory and thus became cultural objects. Of course, this is not to say that the efforts are disconnected from these ecological principles, but it is important to acknowledge that they are motivated not just by the notion of evolution itself but also by the *cultural importance* of the concept, as represented by the iconography associated with it, in other words, the static symbols of change.

It is the potency of the cultural meaning of these symbols that makes the broader moral distinction of native versus introduced species salient. Whereas the native species

symbolize acceptable change in the form of evolution, the invasive rats, feral cats, and goats of Galápagos are themselves emblematic of the *wrong* kind of change.

Moreover, for species eradication practitioners, a key principle in the determination of legitimate environmental change is the assumed separation of nature from the world of human affairs. The notion of evolution symbolized by native species is one of *undisturbed* evolution, which rests on theidea of a fundamental separation between human society and nonhuman nature. This particular ideological tendency, referred to often as the "nature/society divide" permeates seemingly all discussions of environmental matters and has been examined and critiqued by environmental sociologists in the past (Catton and Dunlap 1978, 1980; Freudenburg, Frickel, and Gramling 1995; Murphy and Dunlap 2012). Historian William Cronon (1996) also influentially examined how the logic guiding early conservation in the US was a notion of a fundamentally external "wilderness" that ought to be left undisturbed, which ultimately leaves no place for humans in the nature they might save. In the Galápagos, the animals at the center of the eradication programs are symbolic of either side of the nature/society divide: the endemic species being protected come to represent the "natural" unfettered process of evolution while the invasive animals of Galápagos represent the disruption of acceptable change as proxies for "unnatural" human influence.

In Project Isabela, the nature/society divide was also symbolically and physically represented by a particular feature of the island's landscape, an isthmus of volcanic rock that forms a natural barrier between the southern part of the island home to a small human population and the northern part where the eradication took place, and was key to preventing the human activity in the south (and the goats that serve as proxies for that activity) from compromising the long term goal of returning the north to an undisturbed "pristine"

condition (Charles Darwin Foundation and Galápagos National Park Service 1997). Moreover, this barrier can be seen not just as separating the realm of nature from the realm of society, but also as delineating legitimate human-generated ecological change from unacceptable such change; the effects of the human population on the south must be mitigated by the human intervention of species eradication in the north.

One fact about the eradication program on Floreana illustrates this distinction particularly well. Carmen, an environmental lawyer working for Island Conservation, described to me the way the conservationist team's relationship with the population of Floreana has had to evolve over the course of the program with this story about its early days:

> **Carmen:** The ideal for a project like this is not having people and not having [farm] animals at the moment of the eradication. And the eradication really lasts three months. So, the first idea was "OK we're taking the hundred and fifty people out and we're taking all the cattle and everything out of the island, we intervene on the island, and then we bring you back."
>
> **Andrew McCumber:** Really? Wow.
>
> **Carmen:** And they said "No way."
>
> **Andrew McCumber:** "Absolutely not."
>
> **Carmen:** "Absolutely Not!" Well, [that way] you don't need to mitigate the risks for people, you don't need to make any plans for mitigation of animals … and the investment of the project is lower.
>
> **Andrew McCumber:** Wait, to be clear, that was actually proposed in the beginning?
>
> **Carmen:** Yeah.
>
> **Andrew McCumber:** Oh wow. …
>
> **Carmen:** That's … logic for us. It's like, that's scientific.

Eventually those in charge of the project scrapped the plan to remove the human population from the island during the eradication and has worked much more collaboratively with them

since. But it is nonetheless telling that this was the initial “scientific” assumption – that an eradication program would necessarily entail removing permanent human residents from the island. It speaks to a fundamental incompatibility that is assumed between activity by (non-conservationist) humans and the goals for nonhuman nature there. As in Isabela, though, the eradication program on Floreana involves a massive human intervention in the landscape. For instance, I visited the sites of aviaries under construction to house the population of a native bird species for over a year in the run-up to and during the eradication program (See Figure 4.1). Other structures intended to sequester livestock during the operation were still in progress. Like the Perry Isthmus in Isabela, procedures like these clarify the boundaries of legitimate environmental change according to the nature/society divide.

Figure 4.1. *Aviary constructed on Floreana Island to house native bird populations during rodent eradication program (Taken by Author).*

Animals and Nature: Piecemeal and Holistic Cultural Meanings

For a period in the early 2000s, the sound of environmental conservation on Isabela, the largest of the Galápagos Islands, was the sound of whirring helicopter blades punctuated by gunfire from high-powered rifles. The targets of these aerial assaults were goats, and their death-by-firing-squad was a sentence handed down by a group of conservation organizations including the Galápagos National Park Service (GNPS), the Charles Darwin Foundation (CDF), and the Galápagos Conservancy, who collectively determined that eradicating the goat populations on these islands was essential to preserving the habitats of their native tortoise species. The current eradication program, Project Floreana, may target

different species (rats and feral cats) and lack the same dramatic element of the goat eradication (their primary tools are anticoagulant poisons, as opposed to helicopter-mounted rifles), but it still involves one species (humans) carrying out a systematic extermination of another, on behalf of yet others.

As explored above, species eradication programs in the Galápagos negotiate the cultural boundaries of acceptable environmental change and particularly humans' capacity to be legitimate agents of such change. A key piece of this negotiation that is made inescapable by Project Isabela's Apocalypse Now-esque campaign of aerial warfare is the issue of whether it is justified to kill one species in order to save another, a question whose answer hinges on the overarching cultural ideas of "nature" framing it. Some of the most vocal opposition species eradication has encountered has come from those who object on moral grounds to the use of killing as a method for environmental conservation. Each side of this debate defines the virtues of nature differently, but both in both cases, nature as a comprehensive whole emerges out of the smaller scale symbolism of its component parts (the animals, places, and other material things that bear cultural meaning).

A discernable, overarching moral logic of environmentalism guides the eradication effort, tied to a specific imagination of the "nature/society divide" and visible through the negotiations of acceptable environmental change. Importantly, though, these holistic ideas of nature that lie at the heart of eradication programs are difficult to distil into a single coherent ethos. The contours of those ideas are thus clarified through references to and relationships with symbolically meaningful individual animals. In my interviews with people involved in the programs, I attempted to construct a working understanding of the overarching cultural values that lay beneath the decision to use lethal force for conservation. To do so, I asked them to describe their end goals for the programs – for instance, what was their vision of

Floreana Island when the eradication program was over? Would it return the landscape to a state reminiscent of a particular point in history? Or create a different kind of human-nonhuman balance in the ecosystem? Perhaps the most revealing theme that came out of this line of inquiry was a general lack of specificity. For example, when I posed the above questions to Kevin, the director of that project, he responded:

> So, all of those things are values based. … So part of this for my bit is understanding people's values. … And then looking to have those reflected … in the visions that you set for this stuff, because when you have those reflected out there people stick with that. … And it's more about that vision. And so this is what enables you to continue, as you're going through a project like this, [to] keep pointing to that vision. You know, "You said Floreana would be a better place without rodents and cats."

Kevin declines to offer many specifics in terms of the material conditions of the island, but instead acknowledges that the end "vision" for the island once the eradication program is complete is grounded in cultural values rather than simply in scientifically rational notions of what a healthy ecosystem looks like. He does not directly elaborate that vision or those values, but he offers one concrete statement: that the project is predicated on the assumption that "Floreana would be a better place without rodents and cats." When "nature" is too big a cultural object to look at all at once, we understand it by turning to more discrete and visible cultural objects, the animals that we relate to directly. Carmen, meanwhile, imagined the future of Floreana this way:

> Imagine being able to … [see] hawks flying around or, have snakes that were extinct, or "oh, see that turtle going around? That is because of the restoration project."

The CDF/GNPS reports compiled in advance of both Project Isabela and Project Pinzón have the stated goal of returning the landscape to a "pristine" condition. The Project Isabela report goes into slightly more specificity: "the project goal, to restore the island to as near a pristine condition as possible, implies restoring fully the biodiversity of Isabela and its natural ecological and evolutionary processes, in the absence of introduced species"

(Charles Darwin Foundation and Galápagos National Park Service 1997). The quotations above, though, indicate how operating definitions of "pristine" are understood in terms of animals' cultural meaning, from the rats, cats, and goats that symbolize defiled landscapes and interference with legitimate environmental change, to the iconic native animals that represent the cultural ideal of extrahuman nature.

The methodology of species eradication shines a unique light on the mutually constitutive relationship between individual animals as cultural objects and holistic ideas of nature, because the use of lethal force as a means of conservation is, for many, seemingly at odds with the value system that guides the work. The eradication programs in Galápagos occur alongside other conservation efforts that also require immense investments of time, resources, and energy but are exclusively aimed at keeping species alive. These include well-publicized and ongoing efforts to save various species of giant tortoise, which involve the breeding of these animals at the Charles Darwin Research Center. Compared to projects like this, species eradication programs align less obviously with common cultural sensibilities of environmentalism and conservation that value the preservation of life; though the eradication programs ultimately strive to save native species, the systematic killing of animals is not, in and of itself, easily identified with that goal. As Hillary Angelo says in comparing the sensibilities of ornithologists and birders, "killing animals you love is [hard] to comprehend because most of us are not killing animals anymore" (Angelo 2013:351–52). Likewise, killing animals *for* the animals you love is similarly hard to comprehend, as the violence and brutality of eradication work seem unbefitting of the compassion and tender feelings that often motivate conservation.

When I interviewed Brian, he frequently expressed exasperation about his clashes over the years with advocacy groups including the Fund for Animals and PETA. In

particular, Brian opined that "all the … animal rights groups, what they just can't wrap their head around and ever accept is the death of individual animals." For him, the focus on "individual animals" is myopic and misses the bigger picture of the ecological greater good. After all, few would argue with the notion that a great deal of death and killing is intrinsic to the natural world. In fact, a key ideological trend I noticed in interviews with species eradication conservation workers was the implicit or explicit justification of their methods using appeals to the killing inherent to nature. For instance, I asked Carmen about the pushback some of their work has gotten for its perceived brutality. She responded by indicating that she felt this perception stems from an unhealthy aversion to recognizing the inherent brutality of life in general:

> "Well, my perspective is … our generation and the last three generations are … not used to getting to the brutal part. … But life is brutal. If you give birth to someone, it's brutal. And now people just … have fears of that. And so you need to get back to 'what is natural?' … 'What do we need to do?'"

Carmen's perspective casts the work of eradication as not fundamentally different from the everyday natural processes that govern ecosystems. In fact, she views the systematic killing of invasive species as an extension of those processes. "It's nature," she told me, "in order to survive, you need to kill." Her particular interpretation of nature was further grounded in references to the behavior of invasive species:

> "That's what invasive species do. Rodents, in order to survive, they eat whatever they have in hand. And it doesn't matter if it's a turtle's egg, iguanas, or birds or whatever. ... [But] people [say] 'you're killing something and killing is not right.'"

It is this comparison, between the death caused by introduced species like rats and the killing carried out in eradication programs, that Brian implicitly calls attention to when he expresses frustration with animal rights groups' inability to "accept the death of individual animals."

The justifications for killing that species eradication practitioners turn to, are grounded in a particular holistic cultural idea of nature. My analysis of Galápagos conservation organizations' online blog posts sheds light on the importance of the symbolism attributed to individual animal species (as well as meaningful categories like "invasive" and "native") for generating that working conception of nature. I collected a sample of 1,263 blog posts from the websites of organizations involved in species eradication and conservation in the Galápagos (Island Conservation, the Charles Darwin Foundation, and the Galápagos Conservancy). I then used automated text analysis based on Natural Language Processing methods to isolate the instances where killing of some sort is mentioned in the blog posts I collected[10]. Then I qualitatively coded each sentence for the different species killing and being killed, and whether or not each is described as "invasive" or "native."

From this coding I produced a network map that provides a visualization of the role of interspecies killing in ecosystems, specifically as they are imagined by groups working to conserve them, which is shown in Figure 4.2. Pairs that are coded "invasive predation" (killing of native species by introduced/invasive species) are represented with red arrows, while all other pairs are represented with blue arrows. The transparency of the arrows corresponds with the number of documents in which the pair appeared, where darker arrows indicate more frequent occurrences. The map shows that invasive predation is far and away the most common type of interspecies killing that appears in these documents. The number of red lines and their solidity indicates that this is true both in terms of the total count of pairs and their comparative frequency. The map is slightly more interpretable when filtered

[10] A more detailed description of the process I used to collect these supplementary data is available in the methodological appendix.

to include only pairs that appeared at least twice, as in Figure 4.3, but the overall trend is the same.

Figure 4.2. Network map representing interspecies killing. Lines between two species represent the killing of one by another. Color indicates whether the pair was coded "invasive predation" or not and transparency corresponds with its frequency in the data.

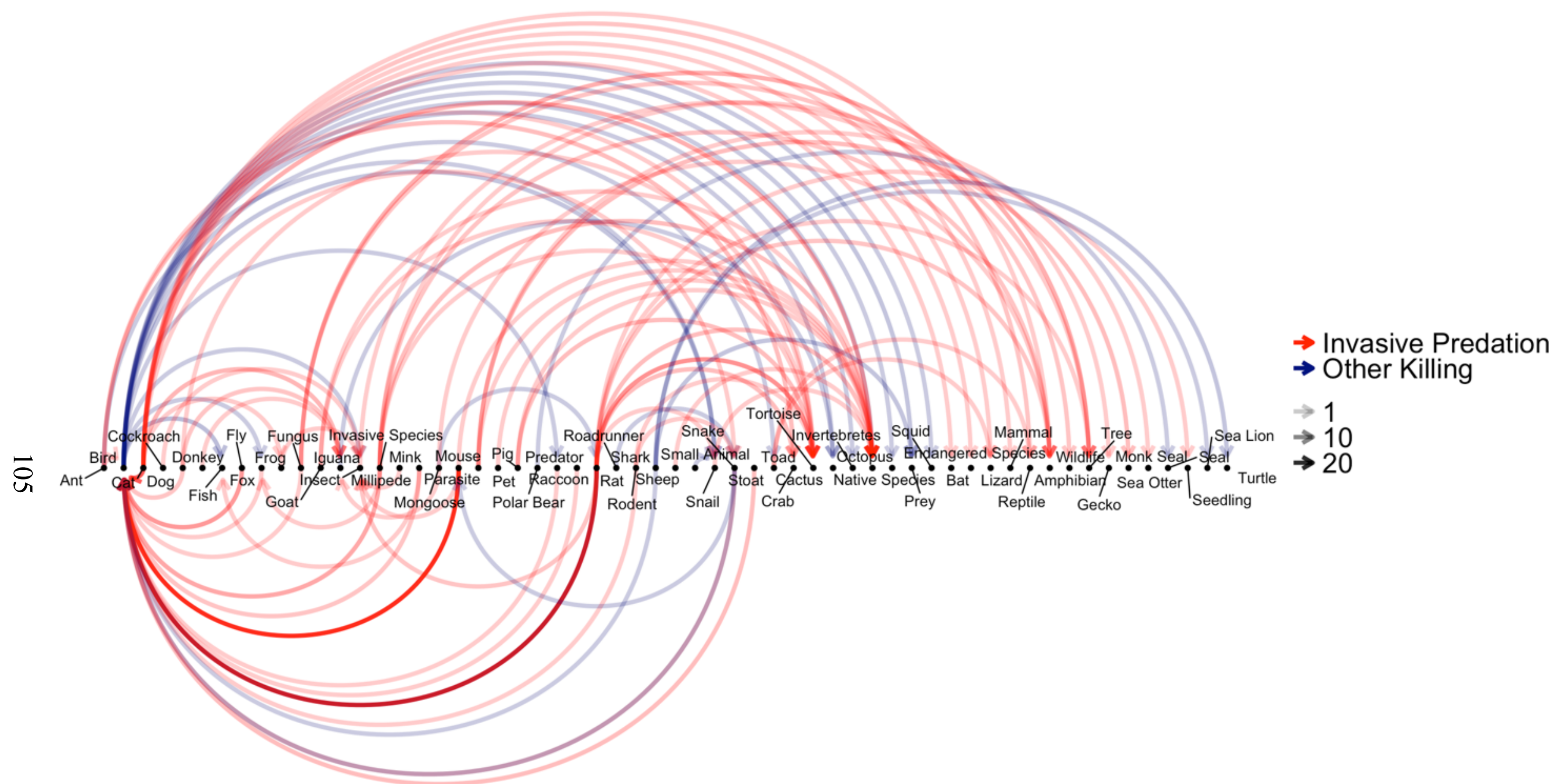
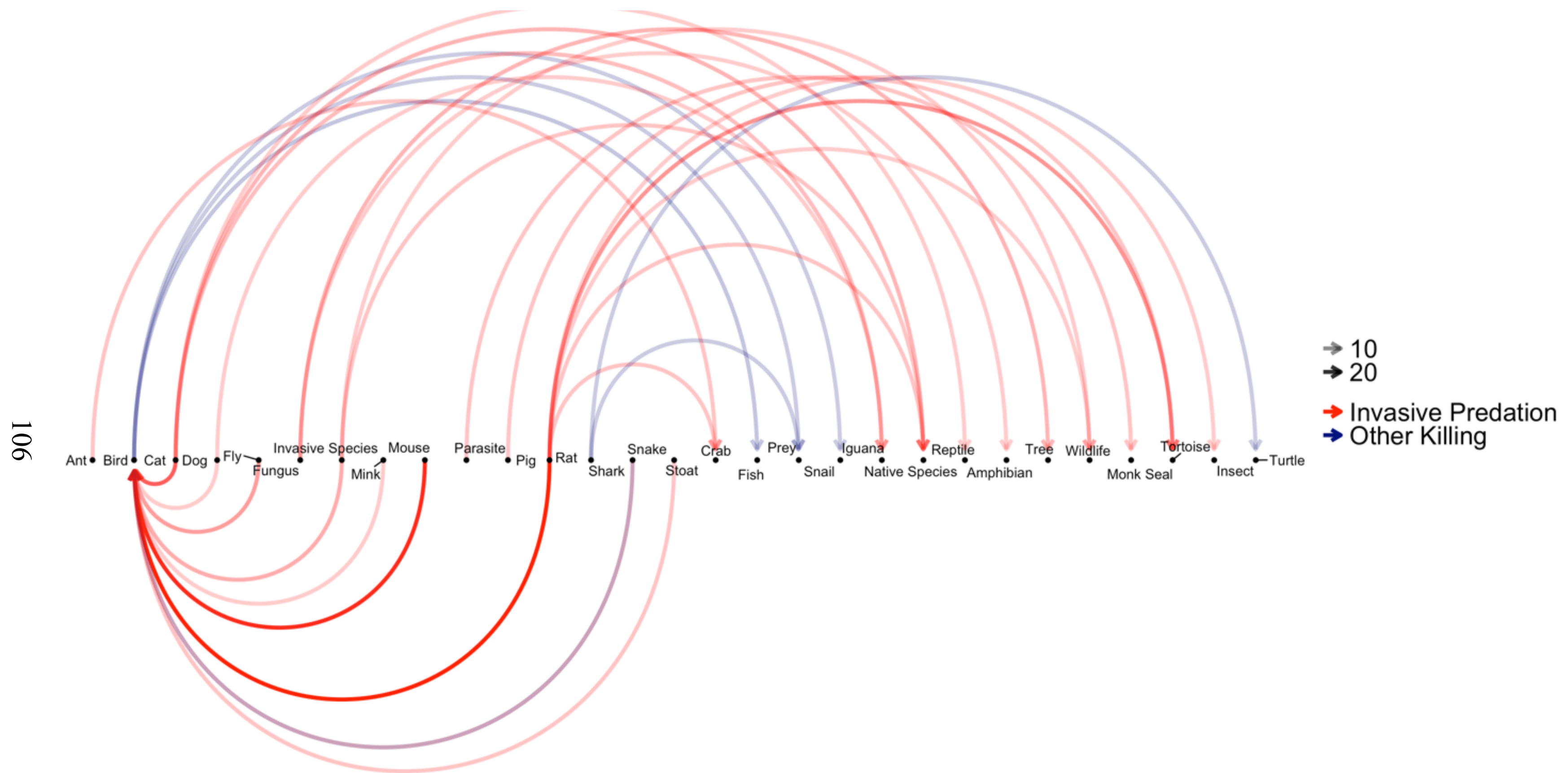


Figure 4.3. Network map filtered to include pairs that occurred a minimum of two times in the data.



The blue arrows show that other types of killing surely are still present in the data. Native birds prey on fish, snails, and other species in the blog posts, for instance, but they much more frequently appear as the victims of invasive rats, cats, dogs, and mice.

These network maps reveal an overarching narrative about nature that frames the use of species eradication for conservation. Interspecies killing may be an inherent feature of a "red of tooth and claw" natural world, but the killing that is emphasized most in these posts (the insidious predation of rats, cats, and goats) is cast as "unnatural." This nuanced portrayal of the naturalness of killing breaks the animal kingdom into deserving and undeserving victims, portraying their deaths as accordingly tragic or routine. One of the blog posts about the threat mice pose to a population of albatross on a remote archipelago featured a gruesome photo of a bloody head wound one bird suffered at the hands of a rodent. This adds important texture to the appeals to interspecies killing that are used to justify species eradication. On the one hand, these are attempts to cast these conservation methods as "natural." On the other hand, though, the justification hinges on the symbolic potency of birds and other native species as undeserving victims of predation, and likewise of rats and mice as killers that must be stopped.

Moreover, both sides of the debate about killing as a conservation tool are invested in the preservation of animals, but they arrive at polar opposite prescriptions for how to go about this in practice. What this comparison reveals is a difference in the kind of nature that animals symbolize for these divergent perspectives. Angelo (2013) argues that animals "make nature for us" at the level of the interactional encounter, and we might interpret the different perspectives around eradication in the same terms – as different cultural

orientations to nature stemming from distinct experiences with nonhuman others. But in this case, the interactions in question between humans and animals are explicitly connected to overarching environmental values and must be interpreted in those terms. In this sense, it helps to consider these animals as cultural objects being deployed in what Dominguez-Rubio would term "different regimes of value and meaning." Whereas for those involved in species eradication a Galápagos tortoise symbolizes the cultural notion of evolutionary change as described above, for many others the value of nature is most clearly identified in instances of symbiosis and harmony. For them, the role of endemic animals as avatars of nature is fundamentally at odds with the use of violence to protect them.

Angelo's argument speaks to the generative role of animals as cultural objects in the "regimes of value and meaning" of nature, but to think of this relationship as "ecological" means to recognize it as mutually co-constitutive. Species eradication practitioners are not simply intervening to save the material, corporeal existence of native animal species, but they are managing their capacity to serve as symbols of a particular imagination of nature, much the same way the Louvre preserves the Mona Lisa's ability to hold its own symbolic capacity, as Dominguez-Rubio describes. The material practice of eradication work then is motivated by an environmental ethos of which it is also involved in the ongoing production. In squaring the conservationists' own actions with morally inflected, meaningful ideas of nature, the attempt to cast killing as "natural" is a further instance of this negotiation between materiality and meaning, between ecology and ecology of meaning.

Conclusion

In this chapter I have used the project of species eradication for conservation in the Galápagos Island as a case study to examine the place of cultural meaning in the

multispecies ecologies humans participate in. Through the lens of the ecology of meaning, I have attempted to demonstrate the dynamic relationships between the materiality of ecosystems and the cultural meaning they hold, both in terms of animals as cultural objects and more holistic notions of nature. The eradication an invasive species for conservation purposes makes both material and cultural interventions in the landscape. By that I mean eradication is intended to materially alter the ecological balance of the islands, but part of the function of this intervention is to preserve the conditions under which species of animals and the broader landscape they inhabit function as resonant cultural objects. The framework of the ecology of meaning helps us to visualize the structure of this cultural meaning in its micro- and macro forms as well as its relationship to the material ecological conditions of the islands.

This analysis charts connections between work that has analyzed animals as "totemic" cultural objects, work that has examined the material interconnectedness of human social life with multispecies ecologies, and work that has theorized the cultural significance of the concept of "nature" in the broadest sense. Understanding the connections between these promises to clarify our understanding of how environmental issues are implicated in social, cultural ones. For instance, in the Galápagos, the connections between overarching ideas of nature, the cultural significance of animals, and the material realities of ecologies play out in discourses of moral worth that adjudicate between what is killable and not, or who or what has a legitimate right to exist and where. These are cultural discourses with high stakes and far reaching implications. We need not look further than the assumption that an island's human population must be removed from their homes for a

conservation program to see how environmental issues are firmly entangled in the social implications of these discourses.

Chapter Five

Conclusion

Tying together the many threads that a multi-sited dissertation project like this one inevitably produces into a neat bow is a difficult task. When I consider all the different interviews I conducted for this project, with government bureaucrats on the 10th story of a Los Angeles high rise, Pest Control Officers in the frigid prairie of western Canada, vacationers on an island just south of the equator and more, one moment from a particular conversation sticks out as particularly emblematic of the story of rats writ large. The interview was with Brian, the conservation biologist who pioneered species eradication techniques and who I interviewed for Chapter Four.

A small digression for a bit of background is necessary here. While Brian and I spent most of our time recounting the history of his long career, which took him to islands across the globe to devise protocols for eliminating invasive species, at one point we turned to the future of rat eradication. For now, the work of eradicating rats on islands like Floreana in the Galápagos involves a massive program of baiting and poisoning using anticoagulants. However, recent scientific advances in genetic editing could dramatically overhaul these efforts. The revolutionary technology called CRISPR-Cas9 has made gene editing easier and more affordable than ever and has also paved the way for the method known as the "gene drive" which ensures the transference of genetically edited traits across generations. Conservationists and organizations involved in species eradication efforts have proposed using the gene drive to control the sex of offspring in animals deemed invasive like rats, essentially ensuring that each new individual born is male. Theoretically, after a few

generations (which would elapse quickly in the case of rats) the population would be nearly all male and thus unable to reproduce. The remaining rats would then die off with little drama, the eradication having essentially taken care of itself.

Given the controversies surrounding the violence inherent to species eradication explored in the previous chapter, many people have embraced the promise of the gene drive as an end run around these moral quandaries. Indeed, Brian told me he viewed it as a more humane option and was enthusiastic about its potential, sentiments which were shared by other key players in the eradication programs in the Galápagos. Others, though, see the use of genetic editing for conservation as posing even more serious ethical dilemmas. The details of the bioethics concerns are themselves a topic broad and important enough for another dissertation entirely, one that I am sure will be written if it is not already in process. When I spoke with Brian, though, I brought up one specific concern I had heard raised in discussions of this technique: while the theory behind using the gene drive assumes a self-contained animal population, what if one of the genetically modified animals stowed away on a boat or otherwise escaped the "laboratory" of the island (after all, this is how many of the species that are targets for eradication arrived at island ecosystems in the first place). Would the gene drive spread out of control? Would an entire continent's (or the world's) population of rats rapidly vanish?

Brian was nonplussed by these hypotheticals. "Do you think anyone would really mind?" he replied.

This question Brian posed in response to my own question feels like it lies beneath the surface of this whole examination of the global project of rat extermination. The real work of rat extermination is not a glamorous pastime. In most cases, it involves dank, dirty

places, toxic chemicals, and, of course, rodent corpses in need of proper disposal. But with that unpleasantness not a part of the equation, how many people would be bothered by a rat-free world? I am not qualified to speculate about the downstream ecological effects that might come from rapidly erasing rats from the Americas or from the world, but the fact that a trained biological conservationist posed this question makes me wonder whether they would change most peoples' minds about the proposition. As things are, few people are vocal in defense of the rats we currently exterminate. Moreover, the context in which Brian posed the question reminds us that it could be more than a simple thought experiment in the not-so-distant future. Technologies like CRISPR-Cas9 promise to give those who wield them unprecedented power to purposefully shape the material landscape of the world. Meanwhile, the urgency of the climate crisis demands that we exert control over the world in different way. As we, through our unequal systems of power and authority that are themselves the object of contest, imagine and enact future worlds, what will we do with the rats of the world?

As I highlight this looming question, my goal is not to provide specific policy recommendations or a moral judgment on the rightful fate of rats. Having examined these three cases, I have an ambivalent attitude about that moral question, myself. I am sympathetic to the motivations of each of rat extermination project. Protecting the livelihood of family farms in Alberta is a worthy goal. Since the beginning of the COVID-19 pandemic, all of us are amateur epidemiologists now, and so it is hard not to be supportive of public health measures like those aimed at preventing the spread of typhus in downtown Los Angeles. And as for Galápagos tortoises, mockingbirds, and petrels, these creatures mesmerized me during my stay in the islands the same way they do so many other visitors,

and I would certainly rather they not die out. On the other hand, the violence and killing that is unavoidable in the work of extermination is difficult to swallow, these compelling rationales notwithstanding. Whether or not we collectively decide exterminating rats is important and justified though, it is important to recognize that we do so based on socially determined priorities, rather than objective scientific truths. Moreover, those socially determined goals are arrived at in a meaning making process that carries the baggage of unequal power systems. It is these points I want to highlight by returning to the two overarching arguments outlined in the introduction.

First, rat control is a social practice that draws and clarifies the boundaries of nature and society.

As argued in chapter two, animals are uniquely positioned to participate in the process of "boundary work" and rat control is an exercise in clarifying several meaningful boundaries, both spatial and symbolic. In Alberta, these include the geographic border between Alberta and Saskatchewan, and the discursive contours of Albertan collective identity. Controlling the lives and deaths of rats lends order to these distinctions. Importantly, though, these boundaries are expressions of the underlying notion of separate spheres of nature and society. Alberta's claim to rat-free fame is a moral accomplishment wherein the province maintains a preferred balance between the human social world and the nonhuman world in its proximity.

The same could be said of the key boundary in the Los Angeles case, between the spatial distinction between "inside" and "outside." Rat control, and the connected goals of homelessness policy, for that matter, attempt to make this inside/outside boundary significant and secure. This too, though, is a ultimately an element of the overarching

distinction between nature and society. In the cultural imagination, cities themselves are paradigmatically anti-nature, though the idea of a clean separation between the urban environment and the natural world may be ultimately fictitious. Nonetheless, guarding the public faith in the boundary between inside and outside maintains the comfort of that fiction, convincing us that cities are indeed cordoned off from the unruly elements of the natural world and that they allow only the "good" forms of nature (urban parks, street trees, etc.) into their centers.

In the Galápagos Islands, of course, the role of rat control in negotiating boundaries between nature and society is the most clear. The very goal of species eradication is to protect a culturally preferred notion of what nature is, what it looks like, and what forms of life it allows. While the decision making process that results in a species eradication campaign draws on scientific reasoning and expert input from biologists, killing one species to save another is ultimately an expression of cultural preferences.

Second, rat control enforces an implicit hierarchy of living things that mirrors and is entangled with social inequalities.

In each of the locations included in this dissertation, we see how rat control not only manages boundaries as described above, but that, in doing so, it wades into the discursive space of power inequalities where it occurs. This is because rat control is premised on the idea that rats are expendable, killable creatures. The Albertan collective identity that rat control contributes to consolidating is one rooted deeply in a current of opposition to outside influence. More specifically, rat control in Alberta resonates with the nativism that is a major cultural force shaping the province's politics. It particularly resonates with the

attitudes of resentment regarding Canada's immigration policies that are more widespread there than anywhere else in the country.

In Los Angeles, the boundary work related to the threshold between inside and outside that the city's response to its city hall rat infestation engages in amounts to a political negotiation of the right to public space. Based on my interviews, I feel confident saying that many of the individual people engaged in the city's tandem efforts to combat the rat problem and address its homelessness crisis have real empathy for those who sleep on the street in Downtown LA and are in favor of progressive measures to address the city's ever-worsening housing crisis. Nonetheless, the slippage that often occurred, where the "rat problem" and the "homeless problem" became indistinguishable, sheds light on another instance of rats becoming symbolic proxies for the marginalized of human society. The same disdain for rats in Los Angeles shows up as contempt for the homeless, who are seen first and foremost as potential causes of a public health crisis as opposed to victims of it.

And finally, in Galápagos, we get a window into the connection between these two overarching arguments and their broader implications. If rat eradication is an exercise in delineating nature from society, then the obvious question is who, in the broadest sense, is deciding what nature is and how to enact that vision. While this site shows us how western versions of environmentalism is largely driving this decision-making process and shaping the interventions that are prescribed, it also provides an example of a more collaborative possible approach. As noted, the NGOs involved in the eradication programs, though they got off to a rocky start, ultimately achieved a working relationship with the local population on Floreana Island.

The note that I want to conclude this dissertation with is not that all killing of animals by humans is inherently wrong or unjustifiable, but that the decision to kill nonhuman others, especially when it is in service of some broader socially important goal, is a culturally significant choice with broader implications than meet the eye. There is no objective formula to decide when it is justified, either. When we create the worlds of tomorrow, we will make decisions that will necessarily affect other forms of life positively and others negatively. If we decide saving particular species on tropical islands is important, some rats will have to die. How we arrive at that decision (and who constitutes the "we" in question) is as important as that decision itself.

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Appendix

Construction of Predation Network from Conservation Blog Posts

I used automated web scraping methods to collect all the blog posts available on the websites for three non-governmental organizations (NGOs) involved in eradication efforts on the Galápagos Islands: Island Conservation, the Galápagos Conservancy, and the Charles Darwin Foundation. This yielded a total of 1,263 blog entries, though the majority of these (920) came from Island Conservation, which has the most active blog of the three organizations. I then used the text parser SpaCy to identify instances where interspecies killing is mentioned. SpaCy reads the documents, "tokenizes" them (splits them into a data frame where each row is one individual word), and records information about each word such as its part of speech and its lemma, or the most basic form of that word (for instance, the lemma of "running" is "run"). With the documents parsed, I used the lemmas SpaCy identified to locate instances where they referred to interspecies killing by filtering the data frame to include only sentences that contain words whose lemmas are "kill," "die," "death," "hunt," "prey," "eradicate," or "exterminate," a total of 683 sentences.

I then qualitatively coded each of these sentences for the species killing and the species being killed, as well as whether each was construed as invasive or native (humans were simply coded "human"). I took a conservative approach to this coding, wherein species were assumed to be native unless identified as introduced/invasive. Only instances of direct, intentional killing were included; descriptions of indirect effects of invasive species, such as the death of tortoises from habitat loss caused by the grazing of introduced goats, were excluded, for example. Some sentences yielded several pairs, while others yielded none. An illustrative example is the following sentence from a Charles Darwin Foundation blog post:

> "It is important to control or exterminate introduced species such as cats and rats so they do not continue to attack birds, and to maintain control of the workings of fisheries and vessels, to avoid incidental by-catch and other diseases."

This sentence generated the following pairs of interspecies killing:

- cat (invasive) → bird (native)
- rat (invasive) → bird (native)
- human (human) → cat (invasive)
- human (human)→ rat (invasive)
- human (human) → fish (native)

Both cats and rats are described as preying on birds, while the sentence also makes mention of human attempts to eradicate both introduced species. Many of the sentences that contained no pairs mentioned the death of an animal from other factors, including the widely reported death by natural causes of Lonesome George, the roughly 101-year-old Pinta Island Tortoise and last of his species.

In the initial round of coding, I recorded the species at the level of specificity used in the documents themselves. Rats, for example, were variously described as a killing "birds," "seabirds," "albatrosses," "petrels," "kites," and myriad other avian species. In a second round of coding, I collapsed many of these into broader categories for the sake of interpretability. Each individual species of bird was recoded simply as "bird," and the same procedure collapsed several more specific entries into the categories such as "snake" and "crab." Because the conventions of language, popular knowledge and understandings of animal species, and formal biological taxonomy are imperfectly aligned, there were no universally applicable criteria to refer to in deciding what level of specificity to use in this round of coding. In general, I aimed to retain as much detail as possible while producing a coherent and interpretable network.

This process resulted in 517 pairs. To produce the final network, I filtered this to include only unique pairs per document (so that an article with several mentions of rats preying on birds, for instance, produces only one such pair). A separate network, included in the main body of the paper, omitted pairs that included humans to visualize killing and predation in the "wild," as it is imagined and depicted by these organizations. Each pair was given a binary coding for "invasive predation" or "other killing," where invasive predation involves an invasive animal killing a native animal.