Coywolf:

Eastern Coyote Genetics, Ecology, Management, and Politics

By Jonathan G. Way

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- To order a copy of my books, pictures, and to donate to my research please visit:
  - http://www.easterncoyoteresearch.com/store or MyYellowstoneExperience.org
- Previous books by Jonathan Way:
  - Way, J. G. 2007 (2014, revised edition). Suburban Howls: Tracking the Eastern Coyote in Urban Massachusetts. Dog Ear Publishing, Indianapolis, Indiana, USA. 340 pages.
  - Way, J. G. 2013. My Yellowstone Experience: A Photographic and Informative Journey to a Week in the Great Park. Eastern Coyote Research, Cape Cod, Massachusetts. 152 pages. URL: http://www.myyellowstoneexperience.org/bookproject/
  - Way, J. G. 2020. E-book (Revised, 2021). Northeastern U.S. National Parks: What Is and What Could Be. Eastern Coyote/Coywolf Research, Barnstable, Massachusetts. 312 pages. Open Access URL: http://www.easterncoyoteresearch.com/NortheasternUSNationalParks/
  - Way, J.G. 2020. E-book (Revised, 2021). The Trip of a Lifetime: A Pictorial Diary of My Journey Out West. Eastern Coyote/Coywolf Research, Barnstable, Massachusetts. 561 pages. Open Access URL: http://www.easterncoyoteresearch.com/TheTripOfALifetime/.

Pay it Forward

Dear Reader,

I wrote this as an e-book because, as a biologist who has made studying eastern coyotes/coywolves my life's work, I wanted to maximize the book's exposure as much as possible. I am offering it for free to anyone in the world who wants to read it. This is the culmination of years of work and delves deeply into eastern coyote ecology, behavior, and genetics. This project was the result of a labor of love that turned into a real-life nightmare in recent years. Thus, it has evolved to include politics because it's important to understand the regressive policies that dominate predator management and the negative consequences many biologists face when they try to accurately portray predators in the context of wildlife management.

The book is nearly 280 pages long and includes 290 color pictures. It is my "tell all" book from the last 20 years and is a must read for anyone interested in predators/ carnivores, coyotes and wolves, hybridization, politics, and how to reform carnivore management. If you enjoy and appreciate this e-book, all I ask in return is that you *pay it forward* by sharing and please consider a donation of $10.00 to support my research and education efforts, as well as supporting the book's Open Access format. That is about the price of one movie ticket and you get to own this book, and all of its pictures, forever.

I may occasionally update the text – an advantage of e-books – so feel free to visit the webpage and see when the latest version appeared. If you do not want to donate from my website, you are welcome to email me and I can provide you with a physical address: jon@easterncoyoteresearch.com or easterncoyoteresearch@yahoo.com.

Thanks in advance! Jon Way

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Acknowledgements

My work would not be possible without the help of friends and family, the rock that makes me who I am. I have never received a dime of state money for this research so they know the difficult nature of operating this scantily funded research effort, but continue, nevertheless, to fully support me in my endeavors.

I have lost colleagues, friends, and funds over this research. Indeed, I've paid a dear price for presenting my work in a truthful manner or for questioning the status quo. When I first started, I was affiliated with a university but because my research conflicted with the policies of our state wildlife agency they created a wedge to separate me from my professors, and tainted my reputation with newer affiliations by slandering me and my work. I am no longer in touch with any of the collaborators who I wrote about in *Suburban Howls*. The tactics the state used, and continues to use, are shockingly inappropriate for a publicly funded agency in charge of public trust resources and the public needs to know about this. The war they waged against me effectively sabotaged the goals I set for my research career.

I appreciate the efforts of Marie Thomas, the reader over my shoulder, who edited *Suburban Howls* and the 2009 version of this book. Louise Kane edited much of the political chapters (10-13) back when I published a Testimonial to describe the state's actions against me in 2016, and she co-wrote the Carnivore Conservation Act of Massachusetts with me. She was a friend when many others chose to abandon me for greener, less political pastures. Dr. Ben Sacks, University of California Davis, provided important comments on the genetic chapters of this book. I believe these revisions helped to legitimize the book and the coywolf concept. My mother, Robin Way, who continues to provide vital editorial work and constructive criticism on all my writing, was also there for me, as she always is, by copy editing the version that I present here.

The support over the years from my family and colleagues has inspired me to continue to try and live a dream to research and to fight for better protection for these marvelous animals. This is a difficult task given the political reality of working in a state like Massachusetts where MassWildlife, the Executive Office of Environmental Affairs, and even the past two Governors, have repeatedly ignored our published findings; findings so compelling they demand better protection for this marvelous animal. Our wildlife deserve better than they are getting from state wildlife agencies and I hope that this book explains why.

Testimonial In Support of *Coywolf*

"For years wildlife managers have abused the public trust by catering to hunters and people with an anti-carnivore mindset in their management regimes. Science and predators have been devalued as a result of this 'rigged system'. It is wonderful to see Jon Way's new book *Coywolf* that is abundantly illustrated and describes the science behind the ecology and genetics of eastern coyotes, who are also now being called "coywolves". Jon also takes on these agencies by detailing the hypocrisy, obstruction, and discrimination that he has faced as a biologist studying these animals. With Jon's lead, it is due time for more scientists to come forward with their own abuses in the hope to reform wildlife agencies to the respected public institutions that they should be. Reading *Coywolf* is a must to help us move in that direction."

- Brooks Fahy, Executive Director of Predator Defense

Introduction

My first book *Suburban Howls*, published in 2007, was a detailed description of this biologist's experiences and findings studying the eastern coyote in Massachusetts. It was intended to be highly personal in nature and a plea for people to better understand, accept, and live with the eastern coyote. Upon its publishing, I vowed that I would soon write a shorter, more picture-oriented tome. The latest research in 2009-10 indicating that this animal was a product of hybridization, and it could aptly be called 'coywolf', only amplified my interest in this project.

I wanted a book where a reader could sit down and casually read it from cover to cover in a relatively short period of time and still learn much about the canid. In essence, I desired a pictorial and written summary of *Suburban Howls* that would be very similar to the popular multi-media presentation (which includes my photos, text, and videos) that I present when speaking before groups, and have given over 300 times to about 17,500 people as of this writing in July 2020.

Eastern coyotes are active year-round, including in the snow.

I also wanted this work to be more general to a region rather than specific to my Massachusetts study sites. Thus, people from diverse areas of Northeastern North America could learn how this relatively new and recently identified canid lives among us, from Atlantic Canada south to New Jersey and Pennsylvania, with all of New England in between.

What Took So Long?

I wrote the majority of *Part 1* in 2009, then sat on it for over a decade. That is not like me, as I normally complete the tasks that I start. However, there were several reasons for this delay. One, I desired to have a traditional publisher for this picture book. Yet, color books are expensive to print, so it was difficult to find one willing to take on this project where I would need to sell at least 4,000 copies to make it cost effective for the company. And with the price incurred by my first two books, *Suburban Howls* and *My Yellowstone Experience*, I didn't want to have a third pile of books stored in my basement. Two, there has been continued controversy surrounding the term "coywolf" with many laypeople using this word but most biologists, besides myself, not accepting it and preferring the moniker "eastern coyote" which, in my opinion, does not do justice for this genetically diverse animal. I have spoken to so many wildlife watchers, homeowners, and hunters over the years who agree with me on how unique and big the eastern coyote is in the Northeast, and what we should call it. Yet, state wildlife agencies avoid the term like the plague. I wanted to wait long enough to see when this debate might plateau, which it now seems to have done with proverbial lines in the sand drawn determining what these animals are.

Three, I was not expecting my career to come to a screeching halt around the time of the release of *Suburban Howls*, where I officially questioned the management of predators to a small percentage of people who want to kill them. The Massachusetts Division of Fisheries and Wildlife (MassWildlife), the agency in charge of wildlife in Massachusetts, has repeatedly obstructed and denied my research since 2007-2009 while allowing a literal slaughter of the animal by anyone who buys a ~$30 hunting license. Up until 2019-20, you could kill the animals out of pure hate and for no reason other than wanting to kill one. (Note: This is still legal in every other Northeastern state except MA.)

It has been so bad, as MassWildlife has come up with lies and excuses to deny my work, that I wrote a 15-page *Research Obstruction Testimonial* in 2016 documenting this abuse. It is straight out of a horror show, but it is entirely true. Unfortunately, however, the testimonial has not, to date, helped revive my career even though I know for a fact that dozens of people wrote to Governor Charlie Baker. He either did nothing or, more likely, contacted MassWildlife to inquire what all this uproar was, and they explained how I was a problem by making life difficult for them by complaining about coyote management especially in my study site where hunters were targeting my radio-collared subjects. The more I was out of sight and out of mind for these bureaucrats, the better.

This treatment and abuse nearly wrecked me. It crippled me and burned me out, making it hard to be motivated to do anything related to my favorite animal. This is especially disappointing because I have always made it clear to MassWildlife that my goal was to conduct long-term research. I talk all about it in *Suburban Howls* and even have an ending chapter looking way into the future. Yet they went out of their way, along with a select person(s) within the town of Barnstable, to ruin my career. I lost former colleagues who I don't stay in touch with as they effectively abandoned me and this study. I have resorted to working multiple jobs, as MassWildlife staff repeatedly bad-mouthed me to affect my career and my mental wellbeing. I will elaborate on this in detail in the latter chapters.

Four, I wanted to wait on this book due to potential career opportunities that never panned out. I worked for 8 years (2010-2017) as a seasonal ranger at Cape Cod National Seashore, part of the National Park Service (NPS). I had always aspired to be a full-time biologist with NPS and thought it would be a great place to continue my eastern coyote research. I was willing to be quiet and take my lumps, hoping that opportunity would arise. Little did I know at the time that MassWildlife would even corrupt that institution. It would take me a couple years of getting terminated from the Seashore in 2017 before I could rationally process and articulate what had happened. More on this situation in Chapter 13.

Why Now?

So, why did I now decide to write this? Well, just as the previous 11 years crushed me, the start of 2020 inspired me, giving me the motivation to complete this project. The COVID-19 Coronavirus pandemic changed the world forever in early 2020 in so many different ways, including realizing that life is not guaranteed and things can change monumentally within a short period of time. As I was stuck working at home for three months, like most of America, I had plenty of time to think about my goals in life in between my high school teaching duties, which has been my full-time employment for the past two years. I had never envisioned myself being a high school teacher, but it provided stability and some great colleagues in my life and, most importantly, intellectual freedom, which was empowering after the prior decade (see Chapters 10-13). I could have an opinion, unlike with the state or federal government, and not get blackballed or fired for my actions. This was huge to spark my desire to move forward and fully tell my story.

Coywolves relaxing. Most sleep during the day and are highly active at night.

In the first half year of this new decade I managed to write over 800 pages of new material for my 2 new e-books, *Northeastern U.S. National Parks* and *The Trip of a Lifetime*, which both detail the wonder and vital importance of having truly protected national parks in America where wildlife lives 'unimpaired for future generations'. Displaying a combined 1,500 pictures, I make the case for establishing many more national parks here in the Northeast where there are currently few. These books are based on my decade plus of travel, which have kept me sane during a personally tumultuous time.

My personal life story, along with the juxtaposition of the ongoing racial tensions and policy brutality issues let me realize that I needed to 'come out' and explain my story. While I am in no way comparing my experience to a group of people who have undergone system racism for the past 400 years in this country, it is obvious that similar systems of power and abuse give wildlife agencies a very conservative, rural, white-centric viewpoint of how to manage resources and also on how to exclude others who don't agree with their ideology.

In June 2020, I watched two movies, *Just Mercy* and *Brian Banks*, to educated myself about the 'Black Lives Matter'/social justice cause. These films, based on true stories, vividly demonstrated how unfair the system is for wrongly imprisoned people. This was especially the case in *Just Mercy*, where the accused was literally never near the crime scene. A convicted felon, who gave conflicting testimony, helped imprison another man for life, until it was overturned with great effort. This setup was obviously perpetrated by governmental officials who were able to keep their jobs even after their blatantly heinous and hateful actions.

While watching these movies, and 10 years removed from some of MassWildlife's most vicious actions against me, I see strong parallels to my life. Not that I went to jail, but I have been in mental hell for over a decade, and continue to be. Purposeful political blocking is preventing me from conducting the research that I spent well over a decade of my career emotionally invested in. And the people at MassWildlife, knowing full well that I wanted to make this research my life's work, went out of their way to annul my research. So many people, from all over the political spectrum, have asked me something along the lines of: 'How could they do this to you? We live in such a liberal state, I thought they were better.'

I repeatedly point out, that beyond the two Senators who represent Massachusetts, and the Democratic Presidential nominee who is always voted for by a ~2:1 majority, the fundamental operation of the state, especially in many towns such as Barnstable, is highly traditional. We also often have, including currently, Republican Governors. There is absolutely no question that the entire functioning of MassWildlife is related to a hyper-conservative, consumptive paradigm that is highly resistant to change at the very top of the agency. It is abundantly clear that you are only hired to upper management positions if you have a similar ideology and keep things from changing no matter what the population dynamics of the state area (i.e., >99% of the public being non-hunters). Any outside voice is ignored, not taken equally seriously, or censured. I will provide detailed examples in the latter half of this book proving this claim while, at the same time, trying to minimize my discussion of politics even though wildlife management is inherently political.

My work with Public Employees for Environmental Responsibility (PEER) from 2017-2019, clearly showed that the public needs to be informed on issues as their support for or against policies is vital. I have experienced the politics of consumptive uses on our national, public lands. My work at Cape Cod National Seashore ended in 2017, despite having reviews that were always outstanding and well within the range of being able to be hired back the following year, because the Acting Superintendent didn't like me forwarding a petition to select staff which almost 8,200 people signed to support treating the Seashore like a national park and hiring me as full-time carnivore biologist. You know when something like this angers – rather than inspires – the park service, there is a problem, especially when there would be almost certain bipartisan support for this idea. In summer 2019, PEER sent the Seashore a letter detailing why carnivore hunting should end and all other hunting should be limited. As of early 2021, the Seashore has taken no action. The rule-making petition cannot be legally challenged and PEER informed me that public support for this ban is critical. Hence, this information is included in Chapter 13 as part of this convoluted story.

A final reason, which further galvanized me to complete this project, was the use of creating electronic books (e-books) to spread the message. While I prefer a traditional paperback to read a manuscript, color e-books allow for rapid dissemination, errors to be corrected nearly on the fly, and they are virtually free of costs compared to the traditional printing press requiring at least 2,000 copies to be printed to make the operation cost effective, even with modern print-on-demand technology and no middle-man like a traditional publisher when you self-publish. They also allow for embedding hyper-links right into the text, which are obviously not available in a traditional print book. These webpages provide useful additional reading opportunities relevant to each section and function much like *Endnotes* in a traditional book. For a smoother flow, I advise that you read the book once and then click on the hundreds of links that I provide on a second read of the treatise.

Through e-books, one can potentially reach many more people than a paperback. Further, my decision to try something new and making this book a "*Pay it Forward*" venture, where people can read it for free and then choose to donate after reading it, will hopefully encourage more people to learn about eastern coyotes and how they are managed. A final advantage of an e-book is the author's ability to control the narrative. I recently watched a fascinating story about LeBron James, the famous basketball player, and how he and three close childhood friends from Akron, Ohio, created their own company to release documentary films. James' team has full control on all aspects of their business. This has made the press less powerful and useful as individuals are able to have more of a voice nowadays. I feel a strong affinity for this entrepreneurism and try and emulate that philosophy since anyone in the world can read this book available for free on my website. While the end result might not be as high quality if published through an established company, I am allowed to accurately tell my story without outside interference, and can make necessary changes as they come about. Thankfully, I have close friends and family that help with editing and give me great suggestions to improve my writing.

A Brief Preview and Disclaimer

Many people will read this and assume that I am anti-hunting and am just another 'liberal snow-flake' or whatever less desirable description they choose to use. However, I have had pets my entire life and raise chickens for eggs so I have dealt with predators in the real-world including chasing foxes twice and coyotes once away from active predation attempts on my animals. These interactions happened because I decided to let my chickens roam free-range in the yard. My dog has a limp from getting in a tangle with a coyote last winter; I still blame myself for letting him run ahead of me in the dark on powerlines, which is a coyote travel highway. Thus, I understand the challenges that carnivores can occasionally present.

I also heat with a wood stove and secure my own wood, obtaining most of it from friends that have a tree come down and do not want the wood, especially pine. I adeptly use a chainsaw to cut the wood up and an ax to split it so I understand the personal satisfaction and feeling of independence of providing essential resources on one's own. I am not against hunting for food and recognize that early hunters, by limiting their seasons, helped save many species of wildlife that we now call "game species", with deer being the most recognizable of them. However, it is very clear that wildlife agencies have continued to openly defer to hunters, who are now a small or tiny majority of the population in rural and urban areas, respectively. These agencies have increased hunting seasons dramatically for species like deer, which many other people would rather watch alive, with little effective public input. You can now hunt deer in Massachusetts for 3 full months – the longest since Colonial times.

This deference to special interests, regardless if the species isn't in any trouble from a population perspective, is troubling and is especially the case for the even smaller subset of hunters who go after carnivores. This is not fair, especially given that wildlife is supposed to be held in the public trust and belongs to everyone. MassWildlife's undue influence on other more preservation-minded organizations (see Chapter 13) needs to be detailed. Ideally, there would be areas that are totally dedicated to wildlife watching, like our national parks, and other areas that allow hunting and other multiple uses. Currently, MassWildlife uses their considerable influence to try and maximize multiple uses (i.e., allowing hunting) on just about all public lands. That could be said for virtually every state wildlife agency. That is where many people draw the line and see these agencies as a special-interest entity that doesn't have the public's best interest in mind.

As I'll discuss in detail later in the book, MassWildlife is heading in some positive directions which will help eastern coyotes. First, the three main people who ruined my career are now retired, presumably living well on state pensions. Second, the new managers value predators and realize that most of the public doesn't hunt. Even though they continue to spin the same "coyote populations are doing well, so we don't have to worry how many are killed", they are actually, slowly, listening to public complaints about overkilling an ecologically important animal. Three, while it took tremendous effort and 95% public support just to make coyote (and other carnivore) hunting contests illegal in 2019, it actually happened with endlessly pressuring state wildlife officials and locally elected officials.

Undaunted, I offer this new book in an attempt to reach out to you, the public, to encourage you to join me in demanding that wildlife be managed for all people, including wildlife watchers, scientists, citizens, and animal welfare and rights groups, not just the hunters who have an entrenched vice-grip on wildlife management policies, even in a supposedly progressive state like Massachusetts. Please support coywolves by learning about them and helping to better protect them by following the recommendations offered herein, on my website, and by other pro-conservation organizations – including MassWildlife – that recognize the value of all wildlife species, including predators.

Finally, share this information with others, whether it be this book or simply referring them to reputable websites and other sources. It is important that people obtain accurate information and learn how to live with eastern coyotes, because they are here to stay. As unique hybrids, there is much we can learn from them.

This book is divided into two parts. The first section discusses the animal's ecology and its past hybridization to create the current creature. I will discuss how to study them using box traps and radio-tracking, then will provide important ecological findings, including home range and territory sizes, movement and activity patterns, sociality, and den and rendezvous site use. In part two, I will use data gleaned from the ecology and hybridization section to discuss eastern coyote management and how that could be reformed. I will then go in-depth explaining how MassWildlife blackballed me, causing my research career to come to a halt, ultimately causing me to lose professional colleagues in the process.

I considered making a time-consuming index at the end of this book but realized that there is no need as anyone can search what want to look for on the PDF by holding down the “Ctrl” and “F” keys simultaneously and searching for whatever word(s) they wish. Plus, page numbers may change if this book is ever revised/edited or made into a print book, which could make providing one problematic. Everything about this book that is non-traditional will hopefully become the norm to increase access to important information to the general public. That said, we will now take a journey into the world of the coywolf, an amazing true tale about a naturally evolving animal.

Eastern coyotes, like western coyotes and wolves, are playful and spend a lot of time interacting with each other.

Part 1: Genetics and Ecology

"The value of an education… is not the learning of facts, but the training of the mind to think."

- Albert Einstein

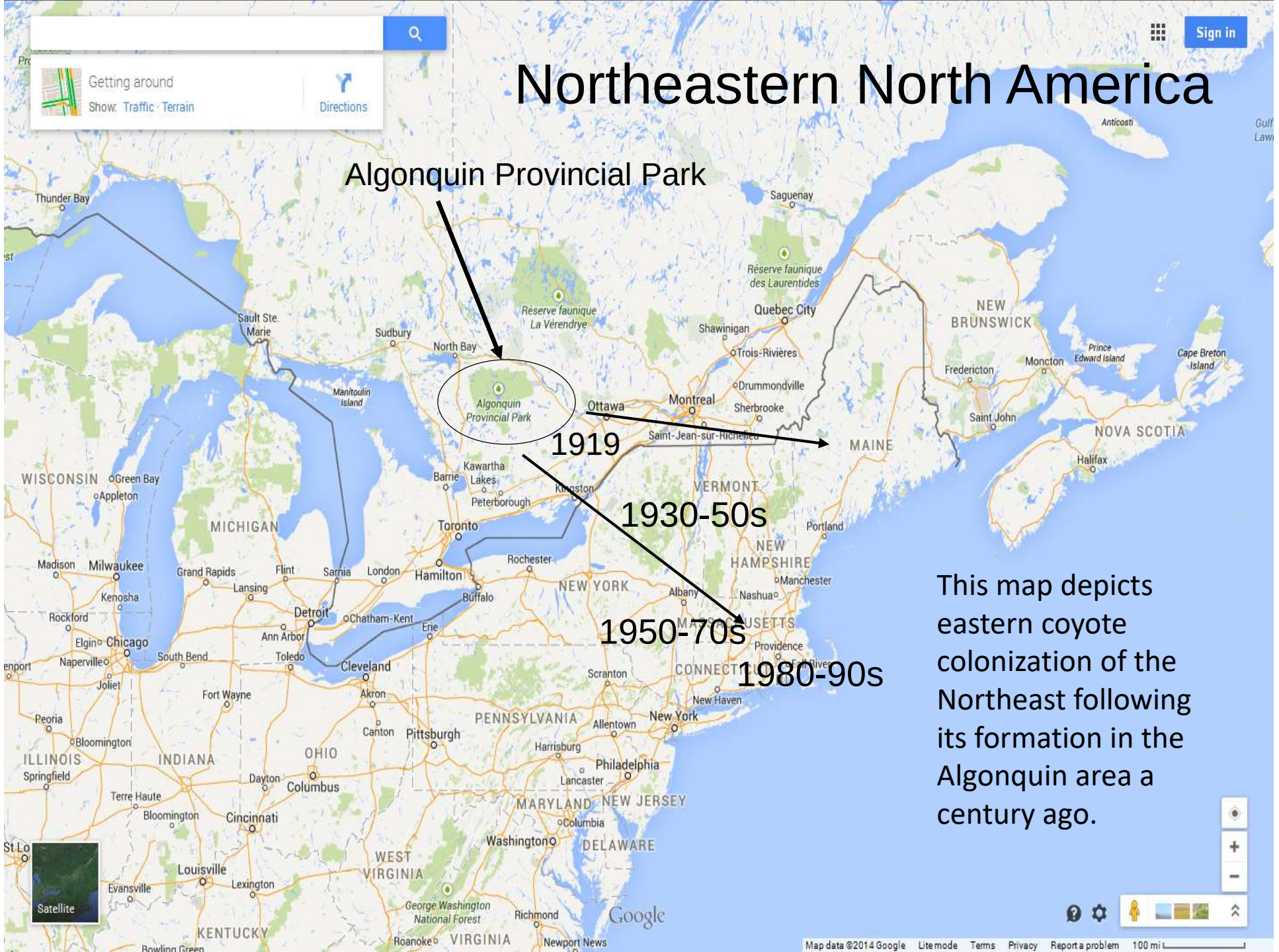
Chapter 1: Meet the Eastern Coyote aka the Coywolf

You may have been fortunate to have glimpsed one trotting through a suburban park or fast-footing across a busy road. Maybe you witnessed a pack in winter chasing white-tailed deer in the snowy North Woods of Maine or on the frozen lakeshores of Nova Scotia, stalking groundhogs in the agricultural regions outside of Burlington, Vermont and Manchester, New Hampshire, or snagging seals on the coastline of Cape Cod.

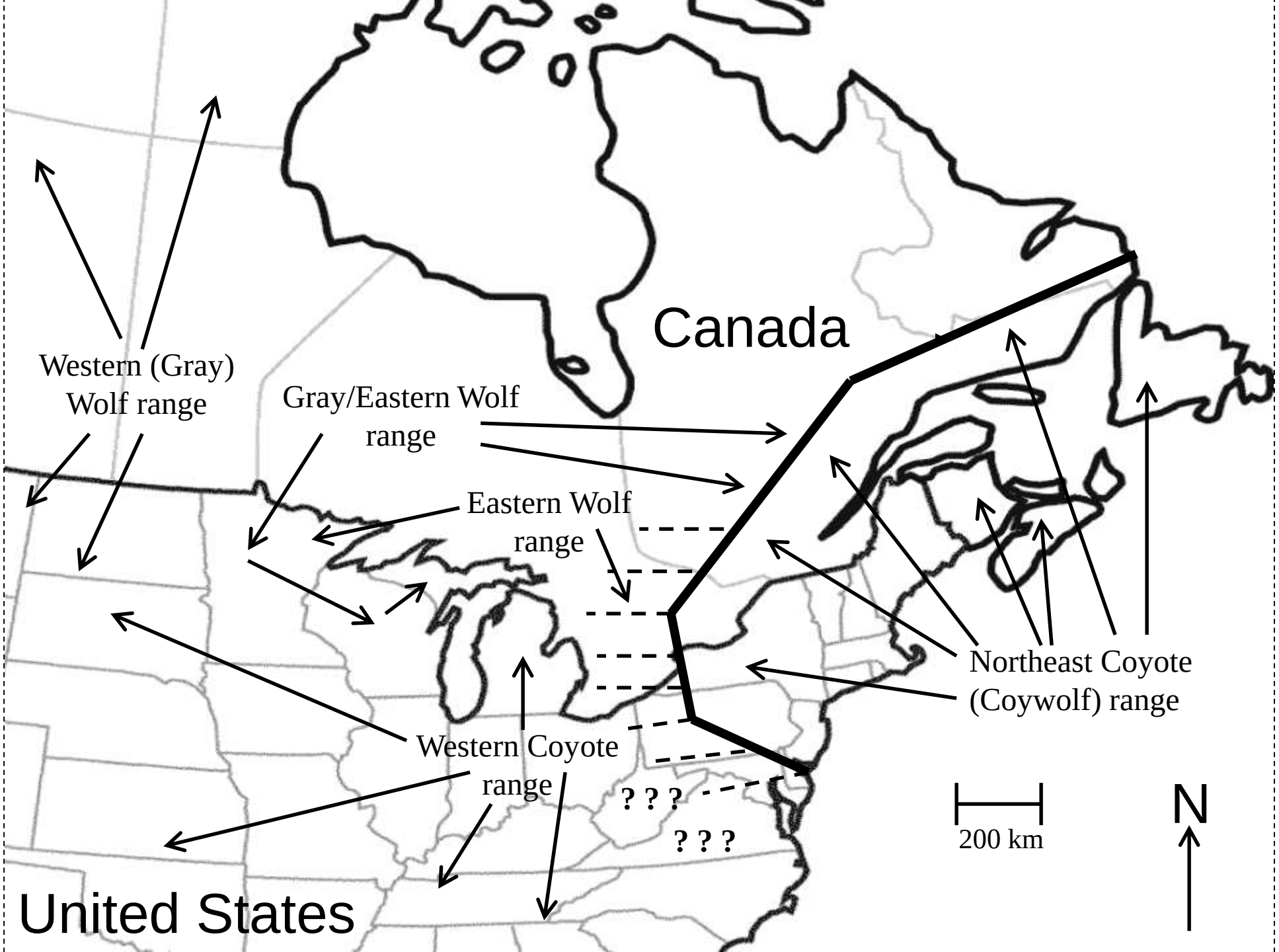
Possibly you have seen a mated pair gliding among the mansions of southern Connecticut or have heard pups howling in the woods of towns in Boston Metrowest, or in the mowed fields of the Berkshires in rural western Massachusetts. Perhaps you have spied their tracks while hiking the mountains of the Adirondacks of New York or the Whites of New Hampshire. Maybe you even saw one foraging in one of the urban parks within the Bronx, New York City. Or you might have had the misfortune of possibly losing a pet to one in the suburbs of any northeastern state or province.

One thing is sure, if you live in the Northeast, it is unlikely that what most people simply call ‘coyotes’ live very far from you. It is found throughout the region, from New Jersey and Pennsylvania up to Maine and New York, and ranges north into Canada including southern Quebec and Ontario, Nova Scotia, and New Brunswick. In addition, combining both the western and eastern coyote, they collectively live in 49 of the 50 U.S. states, excluding Hawaii, and everywhere along the East Coast except some of the offshore islands.

Eastern coyote scent-marking in front of a trail-camera.


Northeastern North America
Algonquin Provincial Park
1919
1930-50s
1950-70s
1980-90s
This map depicts eastern coyote colonization of the Northeast following its formation in the Algonquin area a century ago.
Getting around
Show: Traffic · Terrain
Directions
Sign in
Satellite
Google
Map data ©2014 Google
Thunder Bay
Sault Ste. Marie
Sudbury
North Bay
Manitoulin Island
Algonquin Provincial Park
Réserve faunique La Vérendrye
Réserve faunique des Laurentides
Saguenay
Quebec City
Shawinigan
Trois-Rivières
Drummondville
Sherbrooke
Ottawa
Montreal
Saint-Jean-sur-Richelieu
Kingston
Kawartha Lakes
Barrie
Peterborough
Toronto
Hamilton
Rochester
Buffalo
Albany
Portland
Manchester
Nashua
Providence
Scranton
New Haven
New York
Allentown
Harrisburg
Philadelphia
Lancaster
Pittsburgh
Canton
Akron
Cleveland
Fort Wayne
Toledo
South Bend
Detroit
Ann Arbor
Chatham-Kent
Erie
Flint
Sarnia
London
Grand Rapids
Lansing
Madison
Milwaukee
Green Bay
Appleton
Kenosha
Rockford
Elgin
Chicago
Naperville
Joliet
Peoria
Bloomington
Springfield
Terre Haute
Bloomington
Cincinnati
Dayton
Columbus
Louisville
Evansville
Lexington
Bowling Green
Roanoke
Richmond
Newport News
Washington
Columbia
Fredericton
Moncton
Prince Edward Island
Cape Breton Island
Saint John
Halifax
Anticosti
NEW BRUNSWICK
NOVA SCOTIA
MAINE
VERMONT
NEW HAMPSHIRE
NEW YORK
MICHIGAN
WISCONSIN
ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
WEST VIRGINIA
KENTUCKY
MARYLAND
NEW JERSEY
DELAWARE
George Washington National Forest

Approximate range of the eastern coyote in the Northeast compared to other canid types.



The Big Guy

Northeastern North America (Northeast) is home to the largest type of "coyote" in the region, averaging 32 to 40 pounds, with exception individuals weighing up to 55 pounds (see Chapter 2 for more on morphology and genetics). Its paw print is oval and ranges from 3–3.5 inches long, which is literally off the chart where most field guides are concerned, describing coyotes as having a maximum 2.5-inch-long footprint.

In the Northeast their colors range from blonde to darker brown and black, though they are usually tawny brown or agouti in appearance with much speckled black and brown on their magnificent coats. The attributes of big body size and variable coat colors are largely the result of hybridization with wolves, and to a lesser degree, dogs in their past. This has brought about a new concept (described in the next chapter) that we could actually be calling these animals coywolves, which describes the genetic composition of this successful canid. Throughout this book, I will use 'coyote', 'eastern coyote', 'northeastern coyote', and 'coywolf' when referring to this animal, since they are all synonyms for the same animal inhabiting the Northeast.

The habitat of the coywolf is tremendously variable and includes all available land ranging from wilderness to rural to urban. However, they survive best, and are often found at higher densities, in places with lots of edge habitat such as agricultural and suburban regions. These areas provide cover and an abundant food supply due to the increased vegetation available at the height (i.e., small to medium sized bushes) of their usual prey of voles, rabbits, and deer. There is also less human hunting due to posted private property and restrictions on the use of guns in developed areas.

In my home county of Cape Cod, Massachusetts, eastern coyotes range throughout the peninsula and do very well with the diversity of habitats to choose from, including the area's impenetrable thick brush surrounding the many salt marshes that help to conceal them during the day. The marshy wetlands and dark cedar swamps wet their course pads, the suburban and urban matrix provides areas for their nightly foraging opportunities, and the puckerbrush in conservation areas and formerly old-field habitats hide their prey of rabbit, rodents, and deer, affording them security to spend the day resting. Old fields in rural settings provide mousing (actually meadow vole) opportunities, mixed oak-pine forests in some of our larger natural areas provide denning areas, beachfront along some of the richer sections of the Cape provide some of their many travel corridors, and the region's famous cranberry bogs become their puppy-training centers during mid-to-late summer.

Coywolf tracks are much larger than typical western coyote tracks and are often 3.5 inches long from heel to tip of toe nails *(top center).* Tracks often follow in a straight line like this pair on sand (*left*) and pack of 4 in the snow (*bottom*).

Later in this book I discuss how individual coywolf families enjoy a multitude of habitats that they stake claim to as their pack territory. They declare these areas as their exclusive domain by guarding them from others of their kind. Human created structures, such as powerline rights-of-way and railroad tracks, facilitate their travel.

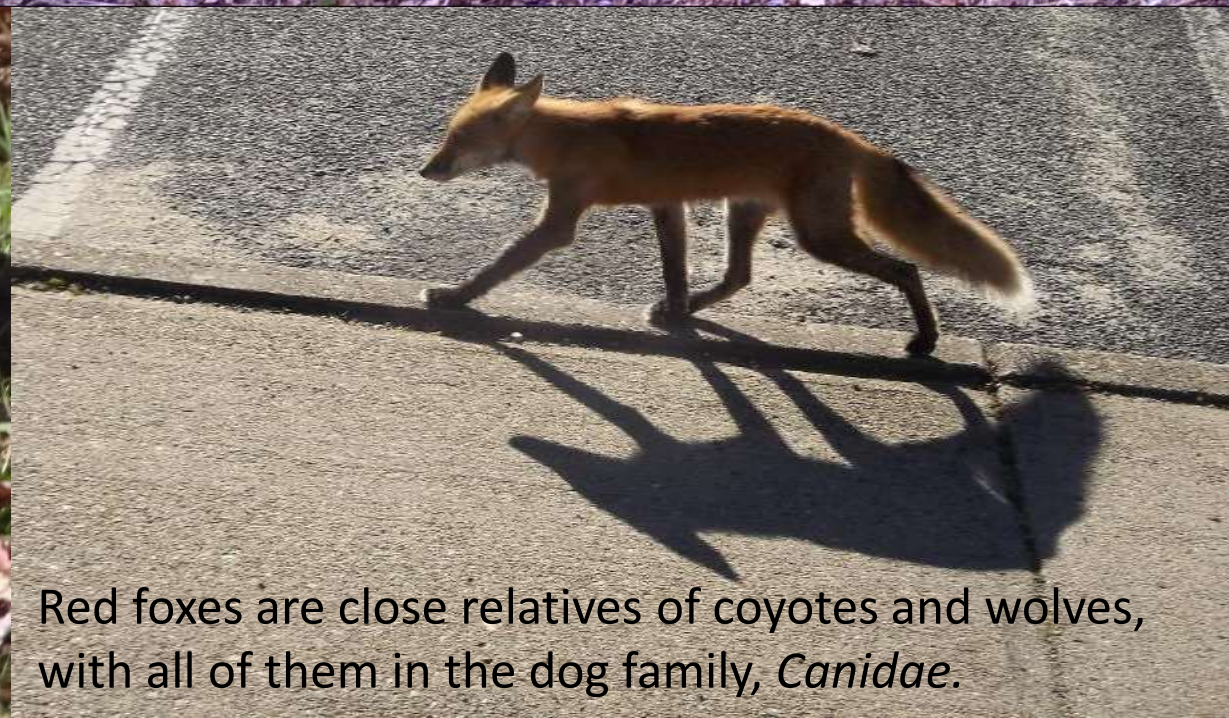
Foraging and Diet

By studying the content, fur and bones, found in coywolf scat (droppings), one can determine what these animals eat in different regions of the Northeast. The eastern coyote, like the western coyote, is an omnivore, an opportunistic predator who eats anything from meat to melons. Small mammals like mice, voles, rabbits, and woodchucks are their predominant food items in many regions. Farmers love them for this, as woodchucks multiply quickly and are serious crop and garden gobblers. Wild canines help keep their populations under control and happily dispose of the bodies as well, unlike the well-fed family dog who might occasionally kill one but then leaves it in the front yard to rot.

Eastern coyotes have a knack for finding food. In the winter of 2001, I returned to my Cape Cod study site after working at the Bronx Zoo in New York for seven months. I hurriedly went about placing my baited box traps back into the field. To my surprise, one of the locations on a golf course quickly had two collared animals (out of a pack of four) sleeping in the same patch of woods where I had planned ahead of time to deploy the trap. It was almost like they knew I was going to be going there on that day. Needless to say, it didn't take them long to find that site.

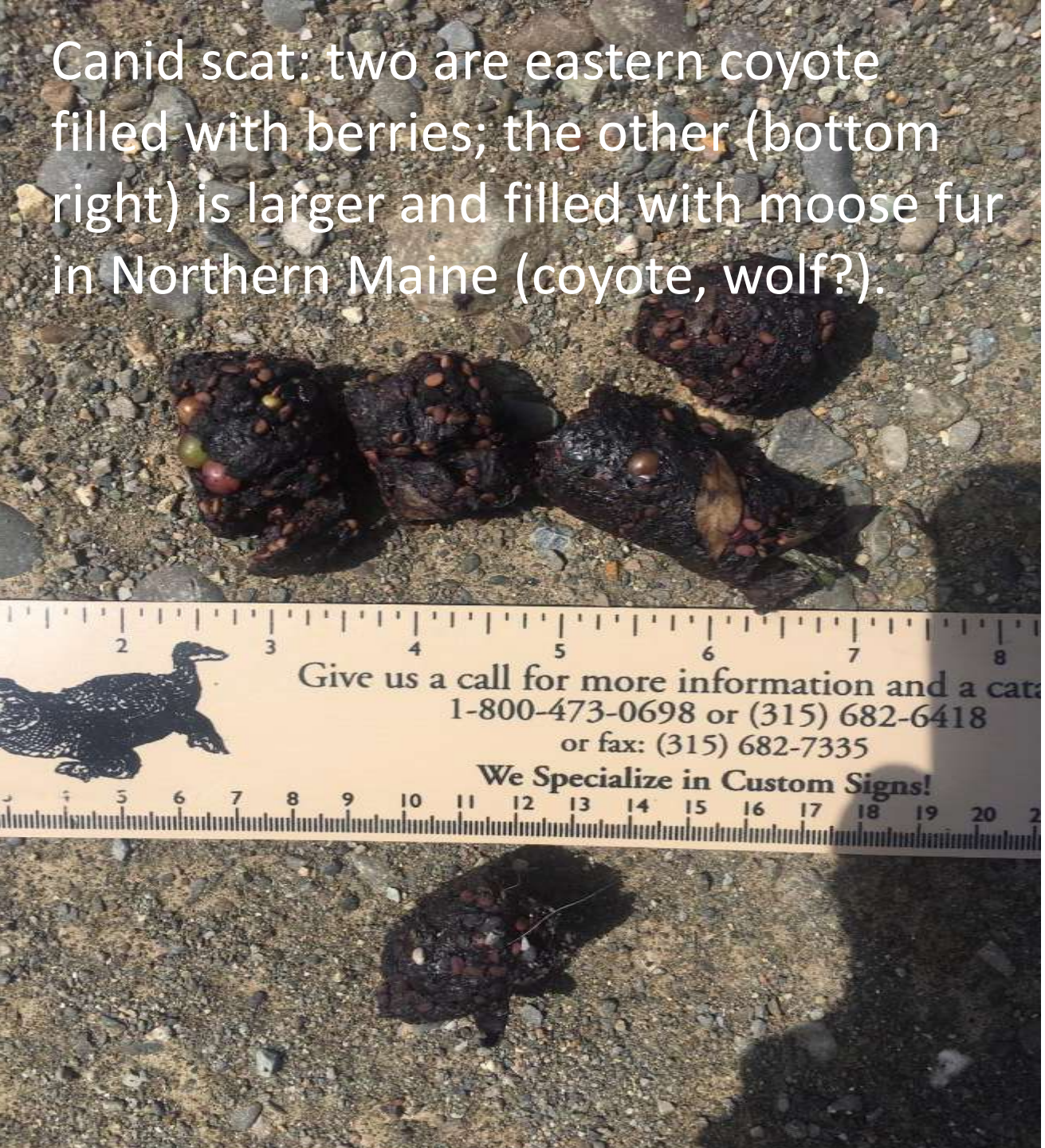
Possibly the strangest food item that eastern coyotes have been documented to eat in this area are seals. I published a paper with a colleague in 2004 documenting a successful predation attempt of a single coywolf killing a young harp seal. I assumed this was an aberrant case of a sick seal. However, within a few years the Marine Mammal Stranding Network (MMSN) documented multiple instances throughout Cape Cod of dead seals that appeared to be the result of canid predation. The necks of the seals were torn out and the carcasses were eaten until the MMSN found them and brought them to their lab for a necropsy. I continue to receive reports of coyotes feasting on phocids.

White-tailed deer (top center), cottontail rabbits (far bottom right), and wild turkey (bottom center) are possible prey for eastern coyotes (left) while fishers (top right, bottom right) are competitors on Cape Cod, MA.



Red foxes are close relatives of coyotes and wolves, with all of them in the dog family, *Canidae.*

Canid scat: two are eastern coyote filled with berries; the other (bottom right) is larger and filled with moose fur in Northern Maine (coyote, wolf?).




Eastern Coyote scat: filled with fur.

Coyotes will eat larger mammals where available, but these are potentially dangerous food choices. White-tailed deer, for instance, have been documented killing wolves in Minnesota with their hooves and antlers, so it is no small task to secure one as a food item. Acting as scavengers or opportunistic predators, coywolves may make highway department road-kill patrols less necessary by providing the service of disposing of dead deer (usually under the cover of darkness), or killing sick or road-injured deer in the woods. However, during winter, when snow impedes the movement of deer, researchers like Brent Patterson in Nova Scotia, and Gerry Lavigne and Dan Harrison in Maine, have documented eastern coyote packs routinely killing and subsisting largely on a diet of deer, with snowshoe hares secondary on their menu.

Certainly, though, newborn white-tailed deer fawns are actively sought throughout the Northeast when they are most vulnerable during June and July. However, research shows that other predators, especially black bears, kill at least as many of these neonates as canines do during this time. Thus, it is largely during severe winters when coywolves may kill seven to ten-month-old juveniles or older deer, that they would have the most impact on deer populations. Where deer are overabundant, like throughout most of New Jersey and Connecticut, this culling can only be beneficial to deer herds. Additional research needs to test the effect that coyotes have on deer in highly urban areas, but Javier Monzón's team has discovered that eastern coyotes have become more wolf-like – up to 30% - where preying on high density deer populations.

Predator Interactions Keep Prey Alert

It is often claimed that no natural predators of deer, other than humans, remain in this region because of the extermination of the larger predators, mainly wolves and cougars (also known as mountain lions or pumas). I tend to strongly disagree. There is little doubt that many factors have contributed to current high deer densities, including: 1) extirpation of those larger predators, 2) reduced (or no) human hunting in certain areas, and 3) habitat conversions that favor deer. Other predators native to the Northeast, primarily black bears and bobcats, might prey on deer, but have never been shown to regulate their populations.

Now that we have these high deer populations in many areas, there is probably no way that wolves or cougars, even in the unlikely event that they returned, would have much of an effect on deer populations. This is the case for three reasons:

1) Deer are most abundant in suburban areas, which are not candidate locations for a reintroduction or restoration of larger predators.

Top left: Coywolves take deer fawns opportunistically, as do wolves and western coyotes, and are therefore an important predator especially where deer are overabundant.

Top right: Coyotes are also important scavengers, cleaning up the environment by eating decaying carcasses such as this road-killed white-tailed deer.

Bottom right: Eastern coyotes may prey on young or even adult deer when vulnerable.

The presence of the coywolf in the Northeast will no doubt help regulate wild turkey numbers, which are becoming increasingly common.

2) Larger predators are not able to live successfully alongside humans like the smaller carnivores (and the large, but omnivorous black bear) can. They would be more likely to return to more rural areas like northern New England where deer are actually not overabundant.

3) Deer are likely so numerous that it is debatable if cougars or wolves, due to their wide-ranging behavior and low densities, would even be able to reduce deer numbers in many of these hotspot areas. This is also assuming they were able to exceed the unlikely odds of returning back to and surviving in human-populated portions of southern New England and the Tri-state area of New Jersey, New York, and Connecticut.

Meanwhile, coywolves, capable of killing deer, currently do live near humans throughout the Northeast. Being smaller carnivores that reside in family units much like wolves do, they naturally live at considerably higher densities than wolves or cougars, and could potentially have more of an impact, and may already have, on deer populations than all the other large carnivore species combined, especially given the current urbanized landscape of the Northeast. Research in northern areas has determined coyotes to be a significant cause of mortality for white-tailed deer, especially when other prey (e.g., hares, voles) are less available. In fact, it has been noted that coyotes in the Northeast may have replaced wolves during winter and spring, in addition to the summer, which supported the hypothesis that coyotes were as effective as wolves in preying upon fawns (from 0 to 10 months of age) throughout the year. And coyotes are being blamed as a scapegoat to be controlled to boost deer and caribou (*Rangifer tarandus*) numbers in parts of the northern part of northeastern North America. Furthermore, recent evidence from the southeast U.S. is showing that deer numbers are likely being impacted by recently established coyote populations and wildlife managers are contemplating ways to protect deer populations such as reducing antlerless (female) hunting.

While the eastern coyote can function as a top-order predator in many ecosystems, it is important to note two things. One, because of their medium-size, they don't have to rely on deer and can subsist on smaller, medium-sized prey. Wolves on the other hand, normally subsist on ungulates for the majority of their diet. Second, they are not ecological efficient predators of moose, and even though they have been documented preying on them, they haven't replaced the role of full-bodied wolves in northern New England and New York where moose are common.

Typical eastern coyote food items are small to medium sized mammals like rodents and rabbits.

Coexistence

Given their ecological importance, we should willingly accept this new predator for its undeniable value to the environment. If we try and avoid unwanted interactions with them (see Living with Coywolves chapter), and allow them to provide their predatory and scavenger services free of charge, it will be a win-win situation. Over time, their presence will make a difference and no doubt help restore the myriad landscapes of the Northeast to a more natural state, especially when living at ecologically effective densities. I find it unbelievable and of backwards logic that as wildlife managers allow longer and longer deer hunting seasons, to presumably try and lower deer numbers, they also allow the liberal killing of an animal that can at the very least help keep deer numbers in check (see Part 2).

Eastern coyotes, similar to wolves and western coyotes, are directly involved in the evolution of their prey, and are thus important members of the ecosystem. The importance of predators acting as 'keystone species' is clearly shown in the book by William Stolzenburg, *Where the Wild Things Were*. The ability of carnivores to control populations of other species, both directly (prey) and indirectly (vegetation), is notable.

If anyone has ever wondered why elk and bison are so formidable, it's because of the relentless pestering from bears and wolves. Deer are so swift because their prime predators are the light-footed wolves and coyotes. Rabbits and other small game run, climb, and fly so quickly to avoid and flee from crafty coyotes and foxes. It is unnatural to have prey and not have their ecologically matched predators honing their evolutionary development.

The East Coast had dynamic predator-prey interactions for millennia until around the 1800s when humans reduced the populations of many species, including prey animals such as deer. Roughly a century or two later, many prey species have recovered on their own or with human assistance. However, the remarkable colonization of this region by a hybrid canid from 30–80 years ago, depending on where you live, has helped restore nature's balance. The Northeast's many ecosystems are surely glad to have this new canid among its major players. It is now time to learn just how this unique creature came about and find out exactly what it is.

Eastern coyotes are secretive, even in the snowy suburbs where this one was seen. Photo by Marie Thomas.

Chapter 2: Hybridization Creates the Coywolf

The eastern coyote had been an enigma to scientists and laypeople for many years. They started to appear in northern New England and New York in the 1930s and 1940s and currently inhabit all of the northeastern United States and southeastern Canada. They currently range from wilderness to urban areas, including some of our larger cities like Boston and New York City (especially the Bronx region).

By the 1970s, these canids were found in a good portion of every northeastern state. And by the late-1990s they were established virtually everywhere in the Northeast, with the exception of some off-shore islands. Individuals have even recently been documented on the western part of Long Island, amazingly making it all the way through New York City, likely over the ice during the winter as well as via railroad tracks through the Bronx. Thus, it is just a matter of time before they probably populate these areas as well, the last unconquered domains in the Northeast.

These animals are often described as a large version of a coyote or a small wolf, and many northern New Englanders still call them coydogs. Until recently, however, there was only speculation as to what this animal actually was. Emerging data has shed new light on this potentially unique creature that is the focus of this book.

Body Mass Data Analyzed

A study that I conducted in 2007 reviewed available data on coyote body mass throughout North America. This research found that 'coyotes' in northeastern North America were easily the heaviest version of the species found south of the Arctic. They are clearly heavier than the nearest subspecies of western coyote, *Canis latrans thamnos*, found in the Midwest. Males averaged 36 pounds (range 31 – 45) and females 32 pounds (range 26 – 40) from 16 different locations throughout the Northeast.

While size dimorphism consistent with observations of other canids was observed between sexes, with males being heavier than females, eastern coyotes were so much larger in general, that females from that region were documented to be 21 percent heavier than male coyotes from outside there. Furthermore, although Bergmann's rule, which predicts larger size with increasing latitude (south to north), has been posited to explain the larger sizes of mammals in colder climates, findings from that study indicated that degrees longitude (west to east) accounted for greater than four times the amount of variation in coyote mass than did latitude. This indicates that causality of large body mass of animals inhabiting the Northeast directly cannot be explained by Bergmann's rule.

Most of the studies in the northeastern United States measured individual eastern coyotes heavier than 40 pounds, which is rare in other parts of the country. I had the fortune of radio-collaring a 55-pound female eastern coyote (*Casper*, whom I introduced in my first book *Suburban Howls*) on Cape Cod, Massachusetts, who traveled and mated with smaller, more normal-sized eastern coyotes. I tracked her for over eight years and documented her having six litters before she left her territory in her old age and became nomadic, ultimately being shot a few years later. She looked just like a red (or eastern) wolf, and some of her genes (haplotypes) matched eastern wolves. I also studied a captive male, born on Cape Cod, Massachusetts, who was also the same weight.

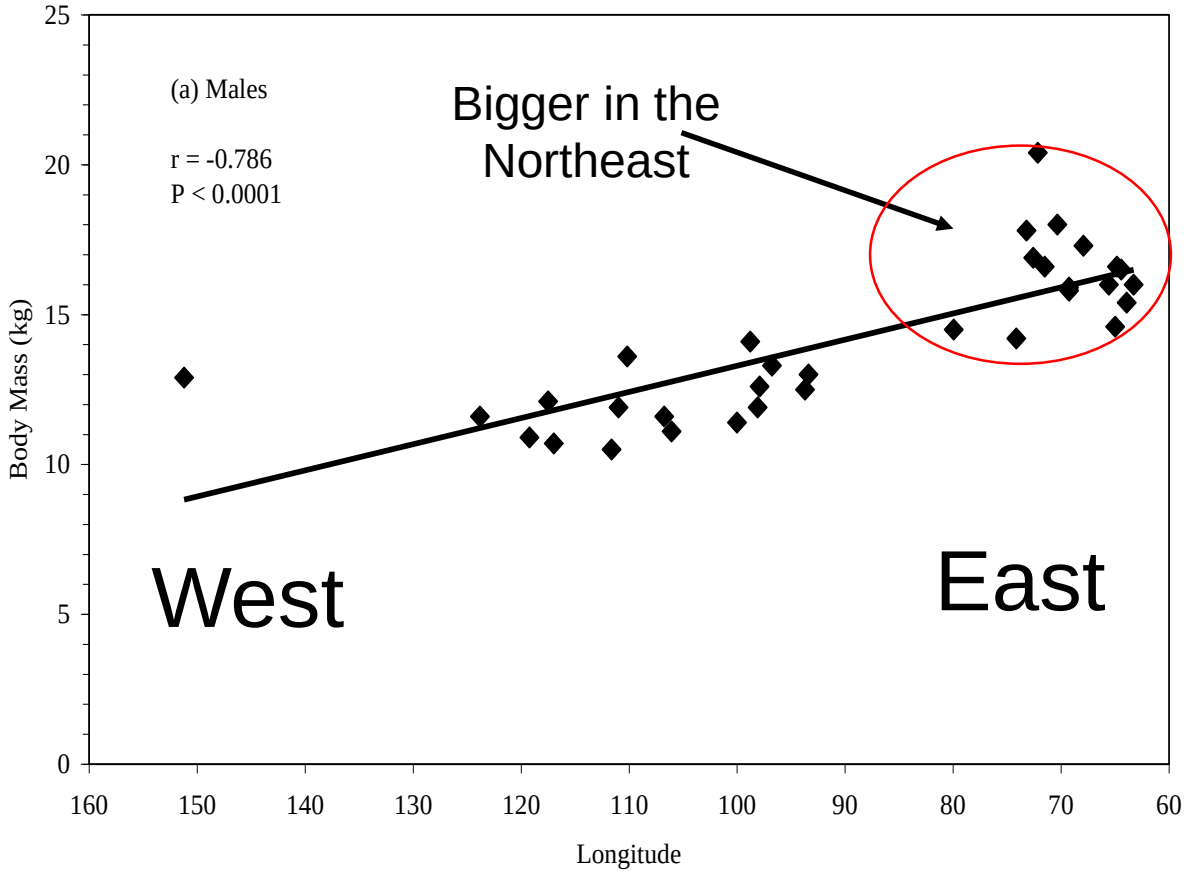
Eastern coyotes often appear much bigger than they actually are due to their long legs, narrow, greyhound-like chests, and thick coats, causing observers to exaggerate their actual size. People often inform me that they saw a 60–80 pound 'coyote'. They do not realize that I have picked up, weighed, and handled many of those same individual animals that they see in the wild when they are in my study site. The funniest instance involved a kind, well-meaning man who took a picture of the smallest adult female (27 pounds) that I had radio-collared to date. I remember her being noticeably small when I held her sedated body in my hands upon radio-collaring her. When I told him her actual size, he told me that I *must* be wrong, because *she was definitely at least 60 pounds*!

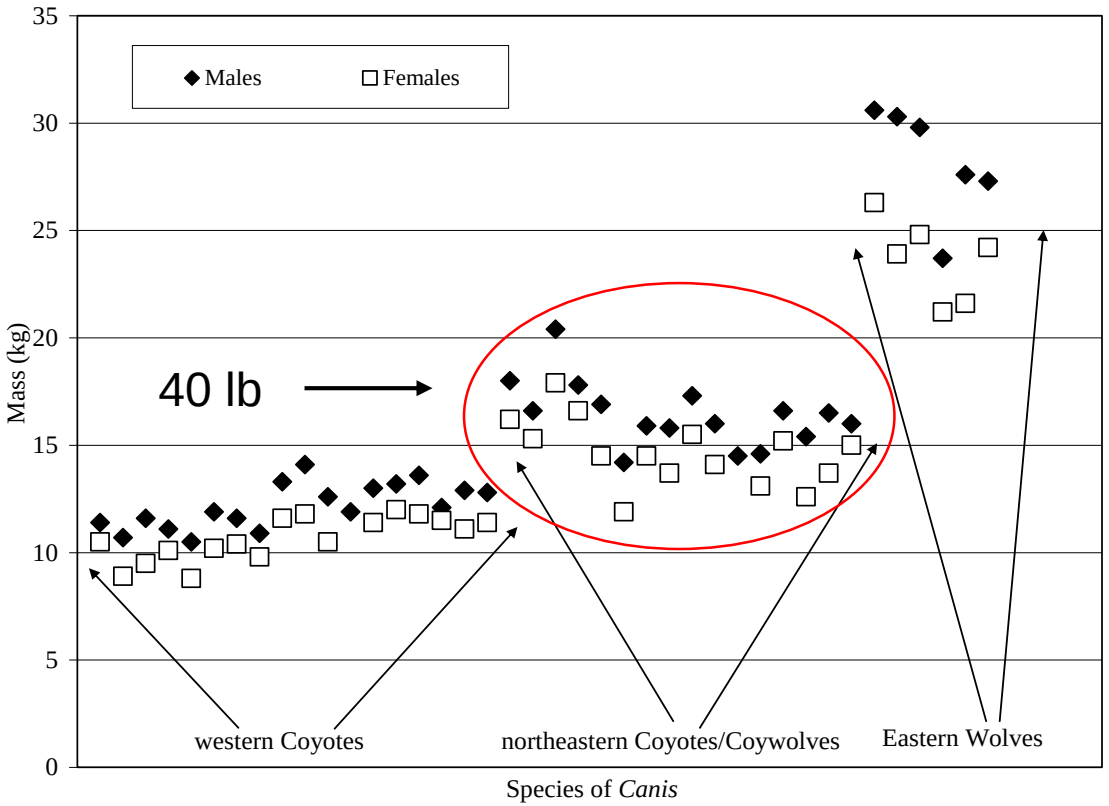
The western coyote (*top*) is more slender in appearance (as seen radio-collared in Yellowstone National Park) than the more robust eastern coyote (*bottom*).

Considering that the average eastern wolf (*Canis lycaon*; see next section for more on them) in Algonquin Provincial Park, Ontario is only around 66 pounds, it would not be possible for an eastern coyote to be that big, except maybe for extremely large individuals. A paper that I published in 2013 compared western coyotes, eastern coyotes/coywolves, and eastern wolves and found that eastern coyotes were intermediate in size. They were statistically bigger than western coyotes but smaller than eastern wolves, although individuals were as small as some western coyote populations or as large as some eastern wolves. I found that numerically coywolves were closer in size to coyotes whereby, in practical biological terms, eastern wolves were 61–71% heavier than the same sex in northeastern coyotes, which in turn were 35–37% heavier than western coyotes. Or put another way, western coyotes were 73–74% of the size of the same sex in the northeastern coyotes, which in turn were 59–62% of the size eastern wolves. These data indicate that there is much more than "minor physical differences" as stated by Roland Kays and Javier Monzón in 2017 between eastern coyotes and coyote populations from other regions, even though this canid is "morphologically more similar to coyotes than wolves" as noted by Tyler Wheeldon and Brent Patterson in 2017 and confirmed in my 2013 research study.

Why do people think they are so much bigger than they actually are? It's possible there is a fear-factor involved since most people are not used to seeing wild canines, and sightings are often brief. But it is likely mostly because wild canids are very tall for their size and look especially robust in the winter when their coats are the thickest. In essence, they have the body of a greyhound which makes them light, but the coat of a German Shepard or Husky. Thus, a healthy 40-pound adult male will likely be as tall or taller than an 80-pound Yellow Lab.

Prior to genetic studies taking place, there had been numerous theories as to why eastern coyotes might be bigger. These include: 1) response to an enhanced food supply and a diet of larger prey, 2) genetic adaptation to prey, and 3) their being coydogs (a coyote-dog mix). Most of the actual recorded evidence discounts all these theories, since medium-sized food (mice and rats, groundhogs, rabbits) and large prey like deer are abundant throughout the United States.





Left: Coyote body mass compared to longitude (degrees W to E) showing that 'coyotes' in the Eastern U.S. are clearly the biggest in North America.
Right: Graph showing that coywolves are intermediate in body size compared to western coyotes and eastern wolves.

A hunting eastern coyote in stalking position.

In addition, coydogs reproduce in fall and give birth in winter instead of mating in winter and giving birth in early spring, like the normal wild canid cycle. The prospect of a female coydog raising offspring in mid-winter in northeastern North America is slim. This is not only because of harsh winters and a general lack of prey, but because male wild canids are not in reproductive condition during the fall, so the sire would have to be a domestic dog. And in that unlikely scenario, a male dog would not contribute to pup-rearing, challenging the dam and making survival of her litter exceedingly difficult.

Most proximately, we now know the cause is their genes, about a third of which are from eastern wolves (see below) but that does not negate that selection also plays a role in maintaining high frequencies of those genes responsible for body size. As Dr. Ben Sacks, professor at University of California Davis, succinctly wrote to me in December 2020 about the topic, "I do not think it is possible to reject the hypothesis that the reduction in eastern wolves has opened up a niche for larger eastern coyotes that can make better use of deer as prey. Nor should you need to claim that it's not the case in order to also indicate the proximate cause (i.e., their genes)."

DNA Profiling Provides Answers

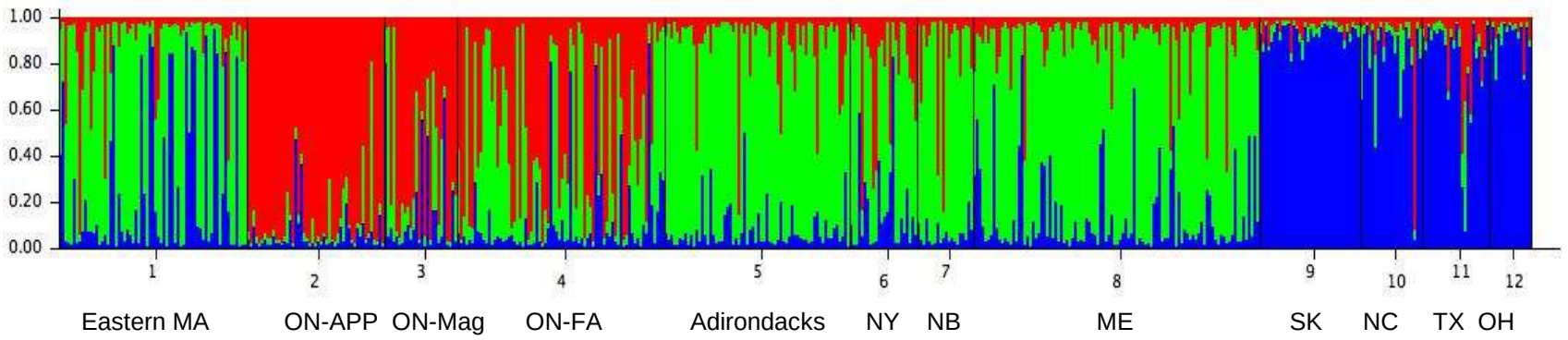
The most plausible scenario to why eastern coyotes are so big is because they are actually a hybrid between coyotes and a small type of wolf. In addition, their evolution for larger body size to occupy an empty niche once filled by eastern wolves could also explain their body size.

Dr. Brad White's research team at the DNA Profiling and Forensic Research Centre at Trent University reported in 2000 that the wolves found in southeastern Canada (in and around Algonquin Provincial Park) are actually the same species as the red wolf (*Canis rufus*, or *Canis lycaon* as proposed) found in the southeastern United States. Simply put, the red wolf and the wolf found in southeastern Canada contain a very high proportion of the same genes, both of which are distinct from the larger gray wolf.

This ‘eastern wolf’, a term referring to both the red wolf and the wolf found in the Algonquin region of southeastern Canada, is noticeably smaller than a gray wolf and weighs about 60 pounds. It is thought to be more closely related to the coyote than to the gray wolf because western coyotes and eastern wolves are theorized to have evolved in the New World (North America), whereas the gray wolf originated in the Old World (Europe and Asia). As data have emerged, it is clear that Algonquin wolves contain a considerable amount of gray wolf ancestry as well. The most likely explanation is that as red wolves expanded north after the last Pleistocene glaciers receded, they met with and interbred with expanding gray wolves from the northwest. Recent DNA research supports their conservation priority status as a unique *Canis*.

White’s research group theorized that the genetic similarity of the coyote and *Canis lycaon* might facilitate hybridization, especially when populations were low in an area, which was the case for wolves in the Northeast about a century ago. Interestingly, one of the biggest threats currently facing the reintroduced population of red wolves in North Carolina is hybridization with coyotes colonizing the western periphery of the Alligator River National Wildlife Refuge ‘red wolf recovery’ area.

As a collaborator with Dr. White’s team, I sent ~75 DNA samples of eastern coyotes from eastern Massachusetts to his lab between 2006-2008. Perhaps unsurprisingly based on the body size information presented above, the lab results provided conclusive evidence for hybridization in my samples, as well as in tissue samples taken from wild canids in New York, Maine, New Brunswick, and southern Ontario. The northeastern canids contained genetic material from both western coyotes and eastern wolves, which, of course, is consistent with the hypothesis of the hybrid origin of the animals that are called ‘eastern coyotes’. The geneticists discovered that the samples grouped together in the Northeast yet were separate from western coyotes and eastern/red wolves even though their genes come from them. This means that they are currently breeding true with other eastern coyotes and now have relatively little influence from their parent species in the core of their range. A result of this collaboration was the publishing of our paper in 2010, *Genetic characterization of the eastern “coyote” in eastern Massachusetts*.



Program: STRUCTURE

ON-APP = Ontario, Algonquin Provincial Park
ON-Mag = Ontario, Magnetawan
ON-FA = Ontario, Frontenac Axis
NY = New York
NB = New Brunswick
ME = Maine
SK = Saskatchewan
NC = North Carolina
TX = Texas
OH = Ohio

Red = Eastern/Red Wolf

Green = Eastern Coyote/Coywolf

Blue = Western Coyote

DNA analysis initially revelated that eastern coyotes are a hybrid between western coyotes and eastern (red) wolves, and not the gray wolf. However, later genetic analysis using different genetic markers revealed that eastern coyotes also have gray wolf and domestic dog admixture (see text).

At the time of our discovery, White believed the eastern coyote (*Canis latrans* x *lycaon*) should actually be classified as its own species because all the samples from the Northeast grouped more closely to each other than to either western coyotes or wolves. Biologists call these same canids "Tweed wolves" in southern Ontario, and White noted that the animals there are also a product of hybridization between coyotes and eastern wolves.

The genetic distance between groups is consistent with the Massachusetts canids originating in southern Ontario and progressing down the northeastern U.S. and into southern New England. Likewise, most of the New Jersey and Pennsylvania animals probably originated from New York individuals dispersing south. These findings were confirmed by a similar study published by Roland Kays and colleagues around the same time, finding that the eastern coyote was indeed a product of hybridization. In western New York and Pennsylvania these more wolf-like 'coyotes' started coming into contact with a different wave of coyotes that colonized the region south of the Great Lakes states.

Javier Monzón's research team published a paper in 2013 stating that molecular evidence has unequivocally confirmed coyote-wolf admixture in the creation of the northeastern coyote. Admixture is when the DNA from multiple populations or species, in this case, combines to create an animal. The process results in the introduction of new genetic lineages into a population. Based on what I have discussed to this point, that statement wasn't a surprise.

Initial genetic studies by Roland Kays' team used only mitochondrial DNA (mtDNA). At Trent University, Brad White's team used mtDNA and nuclear microsatellite loci to examine my, and hundreds of other, samples. As discussed, both studies documented only eastern wolf and western coyote influence in the genetic composition of eastern coyotes. So, just as it seemed convincing that the eastern coyote or coywolf was formed by hybridization between two closely related species, Monzón's study used Y-chromosomes, which is male inherited DNA, and single-nucleotide polymorphisms (SNPs), to discover something brand new. The researchers found low levels of grey wolf and domestic dog admixture in eastern coyotes when using those two new genetic techniques. A parallel study in the same year by Dr. White's research team, led by Tyler Wheeldon, also found domestic dog genetic introgression into eastern coyotes using Y-chromosomes. It seemed that male dogs mated with wild female coyotes and somehow their offspring survived. This was a surprising finding, as it was originally thought that the different reproductive schedules of dogs and wild canines would preclude them from successfully producing offspring and incorporating their heritable material into the wild canid's gene-pool.

A study I co-published in 2016 with Dr. Bill Lynn, a well-known ethicist, made the case for classifying the canid in the Northeast as a new species, *Canis oriens*, meaning "east", or more specifically "eastern canid", in Latin. We wrote that given its mixed species origin and morphological and genetic uniqueness, the most appropriate name for this animal is "coywolf", which accounts for its two main genetic influences (i.e. coyotes and wolves) in portmanteau order. Altogether, using information from the 2010 studies and Monzón and Wheeldon's teams, we concluded that the northeastern coyote has roughly 60-65% genetic influence from coyote, 25-30% wolf and 10% domestic dog.

We thought that the name would still apply even with the relatively small amount of dog introgression in its genome since dogs are essentially domesticated grey wolves and dog DNA is found in many other wild *Canis* species, including grey wolf populations. In fact, it is believed that dog genes gave gray wolves their black coat color, as well as melanistic coyotes in the southeast.

It is important for managers to acknowledge that this animal was produced through cladogamy (i.e., when two or more species mate) events ~100 years ago, but there was now minimal recent admixture throughout most of its northeastern range. We believed that the coywolf was clearly morphologically and genetically different to any other described population of *Canis* and believed that should qualify the animal for species status. We concluded saying that the nomenclature gives them a distinct stand-alone name separating them from their parental *Canis* species/types and the associated relative amounts of *latrans* (coyote), *lycaon* (eastern wolf), *lupus* (gray wolf), and domestic dog genes contributing to their hybrid background.

While confident that this animal is a unique type of *Canis* in North America, which isn't debated in the scientific literature, I knew that the species level designation would be contentious until samples were taken throughout eastern North America and the animal was conclusively determined to be unique. There would have to be a cutoff point and genetic isolation where they become more "eastern coyote-like" and less "western coyote-like". We now know that canids become more "wolf-like" in south to central Ontario, where agricultural lands are replaced by boreal forest near Algonquin Provincial Park, thanks to Paul Wilson's 2009 paper, *Genetic characterization of hybrid wolves across Ontario*. Yet I regularly receive reports of very wolf-like looking 'coyotes' (i.e., coywolves) all the way down to North Carolina and west to Texas and Louisiana. This lack of conformity would likely make determining species status difficult.

Coywolves come in many colors including these two individuals from the same suburban backyard.
Photos by Anne Middleton.

Scientific Debate

There is considerable debate and disagreement among scientists over what to call and how to scientifically classify the canid inhabiting the northeastern United States. In the course of this creature's less than 100 year history it has been variously called coyote, eastern coyote, coydog, Tweed wolf, brush wolf, new wolf, northeastern coyote, and most recently, coywolf, with eastern coyote being the most used common name associated with this animal. Following my team's claim in 2010 that genetic data indicated that this hybrid animal could be called coywolf, rather than a type of coyote, Steven Chambers submitted a response disagreeing with that opinion. He suggested that northeastern coyotes are a part of a larger coyote population that extends to the west and south. Chamber's paper was subsequently challenged by my 2013 response where I argued that the northeastern coyote/coywolf was indeed genetically and morphologically unique, with genes from western coyotes and eastern wolves but in different percentages than their parent species. I rationalized that a similar argument could be made that coyotes in the Northeast are a southern extension of hybridized eastern wolf populations. More recently, I wrote two papers, one discussed in the previous section, and the other appearing in the online journal *The Conversation*, which both claimed new species status for the coywolf, *Canis oriens.* However, others voiced objections over the conclusions that coywolf is the most appropriate term for the canid inhabiting Northeastern North America (Roland Kays 2015 and Tyler Wheeldon and Brent Patterson 2017), and that it should classify as a new species (Roland Kays and Javier Monzón 2017).

Kays and Monzón in 2017 reasoned that if the coywolf is predominantly coyote then it should simply be called coyote with no species status recognition. In analyzing this claim, it is important to remember the difference between a numerical (e.g., voting where the majority wins) versus statistical variance. Despite objections that "coyotes show continuous variation from east to west, as seen in many broad-ranging species," no sources were quoted in that passage despite previous research on eastern coyotes that have shown them to be distinct, even if they aren't technically reproductively isolated. Not only is the coywolf statistically intermediate to western coyotes and eastern wolves both genetically and morphologically, it also looks different than western coyotes. Due to its hybrid background, the phenotypes (i.e., physical appearance) of northeastern coyotes give it many unique appearances compared to other *Canis*, including individuals with white faces, red coat colors, and darker German Shepard looking pelages, with influence from wolves and dogs no doubt playing an important role.

Given that this animal is 60-65% coyote, 25-30% wolf, and 10% dog, up to 40% of this creature is *not* derived from coyote DNA. Kays previously stated that coyotes in the Northeast are mostly (60-84%) coyote, with lesser amounts of wolf (8-25%) and dog (8-11%). However, the lower values of 8% wolf (and 84% coyote) used a study by Bridgett vonHoldt and colleagues in 2011 that has since mostly been discounted by subsequent papers, mainly by Linda Rutledge and others in 2012 and 2015, concluding that eastern wolves were not adequately sampled in the original analysis. When eastern wolves are factored into the equation, more genetic material is attributed to wolves. Monzón and Kays even showed those results in their 2013 paper.

Interestingly, every state wildlife agency that has acknowledged that eastern coyotes have this hybrid background, always use the outdated 84% coyote and 8% wolf figures in their publications, and say something similar to 'this animal is mostly coyote with only a little bit of wolf'. They never acknowledge the eastern wolf as a unique species that was probably the original wolf found throughout much of the Northeast, despite an abundance of literature to support such a designation. This has hampered the eastern wolf's cause in the Northeast, as well as downplaying the uniqueness of the eastern coyote. I urge readers to call out state wildlife agencies for publishing those inaccurate figures.

In my responses to Chambers and Kays and Monzón, I made the case that the vernacular terms coyote, eastern coyote, and northeastern coyote undervalue the importance of the eastern wolf and the non-coyote genetic material in the ancestry of this canid, effectively discounting these important facts:

(1) About 1/3 of the population's mitochondrial (mt)DNA (the C1 haplotype) is derived from the eastern wolf;

(2) Another >1/3 (C9 haplotype) is not found in most western coyote populations but is found in eastern wolves; note: the C9 haplotype has also been found in low frequency in Great Lakes states and mid-Atlantic region coyotes but this is a product of coyote × eastern wolf hybridization there as well;

(3) Microsatellite DNA indicate they are unique and separate from western coyotes and eastern wolves;

(4) They share Y-microsatellite haplotypes with eastern wolves and dogs; and

(5) They are morphologically unique from their parent species.

Wheeldon and Patterson in 2017 noted that Bill Lynn and my 2016 paper downplayed the significance of domestic dog introgression in this canid, yet that was not the intention. I agree that the dog is considerably different than wild wolves ecologically, behaviorally, and morphologically; however, the point in the simple nomenclature is to have a short one-word name (i.e., coywolf) term that "captures" the majority of this animal's background. Given that coyote and wolf genetic material constitute ~90% of this canid's genome, it would seem that coywolf would indeed be an apt summary of this creature with no intention of discounting that ~10% of this animal's genome is indeed derived from domestic dog and that there is widespread potential for future hybridization with dogs even though it does not seem to be happening. Plus, as discussed, many other canid populations, including wolves, have low levels of dog genes.

Benefits of Hybridization

Hybridization can be viewed negatively yet is a natural process that can be greatly accelerated by human modifications, like hunting and habitat destruction. Humans even have a hybrid genome with Neanderthals, albeit considerably less (~3-5%) than coywolves have of wolf input. Where there are permanent alterations to the environment, like in southern New England, there could be positive benefits to hybridization whereby a species (or canid type) uses genes from the parent species that created it, effectively allowing it to continually evolve into an "appropriate" fit for a landscape.

Education efforts could actually use the hybrid canine as a model for science education and a flagship for dynamic, urban ecosystems. While protecting habitat is vitally important to maintain wolf populations, this is not possible in many regions like much of the southern Northeast. In these areas, any canid on the landscape is important, especially one with genes from multiple species that may aid it in adapting to local conditions where it can regularly prey on animals as large as small ungulates like deer. Recognizing the uniqueness of this hybrid should be regarded as a positive, rather than a negative characteristic.

A major argument against assigning species status to the coywolf is that they do not experience reproductive isolation. However, recent research by Paul Wilson and others has confirmed that all canids in the genus *Canis* can and do mate with other species (or canid types) including gray wolves with eastern wolves (around the Great Lakes area), eastern wolves with gray wolves and western coyotes (north and south/west of Algonquin Park, respectively), western coyotes with eastern wolves and eastern coyotes, and their hybrids, especially at the edge of their respective ranges. There are no major geographic barriers separating any of these canid species or canid types. The only two species that appear to not interbreed in the wild are western coyotes and western gray wolves.

Top: Blood samples from each coyote captured and studied was put on this specialized paper then mailed to Brad White's DNA Profiling Lab at Trent University.

Right: The eastern coyote is more robust and redder than a typical western coyote. Photo by Tom Williams.

It is important to reinforce here that eastern coyotes in the core of their northeastern North America range, which centers around New England, currently have minimal influence as western coyotes (and to a much smaller degree, eastern wolves) hybridize with them at the edge of their range. In other words, coywolves are largely mating with each other and not with their parental species throughout most of the Northeast. Kays and Monzón's paper in 2017 presented a picture that canid hybridization is happening all over the Northeast yet no pure western coyotes and only a few wild wolves have been documented in the Northeast.

Dr. Sacks explained to me in that December 2020 email, "Now that the southeastern front [of coyotes] that had been expanding north and the northeastern front that had been expanding south have connected, I suspect that introgression from the south, which has a much higher proportion of coyote genes than those from the north, will have a homogenizing effect, even if clinal." That is a very interesting take on the continued evolution of coyotes in the east especially since southeastern coyotes are intermediate in size and genetics to western and northeastern coyotes. Furthermore, Joseph Hinton and colleagues noted in their 2019 paper that selective pressure on the eastern expansion range favored larger coyotes because of their greater dispersal capabilities, rather than their ability to kill deer. They reasoned that increased dispersal distances would have improved connectivity among populations of coyotes in eastern North America during the colonization period of the mid-20th century.

Conclusions

In my past writings, I have questioned if the generic term 'eastern coyote' is even accurate or appropriate considering that colonizing 'coyotes' in eastern North America are considerably different from each other whereby southeastern coyotes are more coyote-like compared to northeastern coyotes. Coyotes in the mid-Atlantic region have medium amounts of wolf introgression compared with more typical western coyotes in the southeast that have little wolf but some domestic dog admixture and the more wolf-like coyotes in the northeast. Wheeldon and Patterson, in their 2017 critique of Bill and my paper, noted that the term 'eastern coyote' refers to the canid in the Northeast and that coyotes in the southeast are regarded as western coyotes, yet Gerry Parker's 1995 book, one of the seminal sources written on the eastern coyote, includes the southeast as 'eastern coyote' range. In addition, other sources, including Mastro in 2011 and Kays in 2015, described all of eastern North America in their eastern coyote classification, and Atwood and Weeks in 2002 even referred to coyotes in Indiana as eastern coyotes. Clearly eastern coyote is potentially as confusing or maybe even more inaccurate as a label given the usage of that term outside of the Northeast. Thus, even though I agree with Wheeldon and Patterson's sentiments that southeastern coyotes are mostly western coyotes, the term eastern coyote is used inconsistently.

Some of the critiques noted in the section above said that the term coywolf is confusing or misleading. Another perspective is that in one word it quite accurately summarizes the main components (~90%) of this animal's background. Other species have far more names. For instance, cougars (*Puma concolor*) are also called mountain lions, pumas, catamounts and panthers, among dozens of other local names. To use the terms 'eastern coyote' (or northeastern coyote) and 'coywolf' as synonyms seems equally valid. Quite simply, the term 'coywolf' accurately describes the animal and doesn't imply anything beyond the term. It is important to remember that no paper has suggested that coywolves replace the ecological role of full-bodied wolves but instead argue that better protections of them might actually facilitate the recovery of wolves (see Chapter 8).

I submitted much of the material from the previous two sections to a journal in response to the critiques that Bill Lynn and my paper received. The editor rejected the manuscript because I wasn't presenting any new material, and noted that the dynamic nature of these animals is an important part of the argument *not* to give species-level names to any of the populations as more evolution can be expected to unfold from the recent contact between southern and northern flanks of coyotes colonizing the East. However, the reviewer of my work did find the arguments supporting the use of the common name 'coywolf' more compelling. After receiving the news of that paper's rejection, and too burnt out to formulate a response to a different journal, I digested and thought about this information for a couple of years before using those very helpful comments to help me write this section.

Canis latrans* x *lycaon* x *lupus

I maintain that coywolf is the most appropriate term for this canid inhabiting the Northeast but have no problem using the term eastern coyote synonymously, especially given its historical usage, even with the aforementioned issues of that term. I also concede that the canid may not yet be a candidate for species status (i.e., *Canis oriens*) as it continues to evolve, even though it is clearly genetically unique. For years I have thought that it should be scientifically referred to as *Canis latrans* × *lyacon* and not as *Canis latrans* var., which means a variation of coyote. However, after much thought I now believe that *Canis latrans* × *lycaon* × *lupus* is the most appropriate classification. We now know their hybrid status for sure so including *lycaon* accounts for the known presence of eastern wolf alleles while the *lupus* designation at the end describes the smaller amount of gray wolf and domestic dog influence, since dogs are classified as a subspecies of gray wolf.

I agree with Wheeldon and Patterson (2017: 15) that “the realm of *Canis* taxonomy is likely to remain controversial and confusing for some time, thus researchers should strive for clarity and consensus in nomenclature”. Therefore, I hope that the premises explained in this chapter better explain why ‘coywolf’ is an appropriate term to use alongside ‘eastern coyote’ for the canid inhabiting Northeastern North America. Perhaps an email that I received stated it best when the writer bluntly indicated to me, “For anyone that disagrees with the term coywolf, just go out west and look at what an average western coyote looks like. They look nothing like the animals here in the Northeast.”

Top: This coywolf seen jumping at the Queens Zoo was captured living wild in Manhattan’s Central Park. *Right*: This record-weight female eastern coyote weighed 55 pounds.

Top: Eastern coyote trotting on a wooded trail in the winter.
Right: Coywolf on alert.

Chapter 3:
Genetic Analysis Identifies main *Canis* Types in Eastern North America

It is qualitatively obvious that the eastern coyote is unique when comparing the size and physical makeup of various coyote populations. While the previous chapter's discussion of canid genetics might have been a tad confusing to the layman, one thing is for sure, and that is the main point of the coywolf being a product of hybridization between closely related *Canis*. It is now the dominant predator currently inhabiting the Northeast.

There is skepticism within the scientific community that the eastern coyote is actually its own species, with the two main arguments being that too little time has passed since their hybrid formation and they aren't reproductively isolated throughout their range to warrant distinct species status. However, it is highly unlikely anyone would argue against this canid not being a unique member of the genus *Canis* given its admixed origin between coyotes, wolves, and dogs.

The general consensus is that the western coyote (*Canis latrans*), eastern (timber) wolf (*Canis lycaon*), and gray wolf (*Canis lupus*) hybridized to produce the eastern coyote/coywolf (*Canis latrans* × *lycaon* × *lupus*) and Great Lakes wolf (*Canis lupus* x *lycaon*; which currently resides in Minnesota, Wisconsin, and Michigan in the U.S. and western Ontario) in eastern North America. A comprehensive review of the taxonomy of wolves in North America supports the eastern wolf as a distinct taxon as has most of the research on canids in eastern North America (see Chapter 2). The genus *Canis* presents challenges to the Biological Species Concept in North America because there are three closely related species (western coyote, red/eastern wolf, and gray wolf) in North America and gene flow occurs between them. Although there is no evidence for direct hybridization between pure gray wolves and western coyotes in the wild (although there have been experimental crosses), the eastern wolf mediates gene flow between these other two species. This is especially apparent in southeastern Ontario where the term '*Canis soup*' was coined to reflect the mix of eastern coyotes, eastern wolves, gray wolves, and their hybrids. Furthermore, the degree of hybridization and terminology associated with these hybrids can be confusing; for example, last chapter's scientific debate over the use of the term coywolf versus eastern coyote.

A Pictorial Representation

Humans are a visual species. We learn and obtain information though our eyes. So, to try and make it easier to imagine all of these canids discussed in this book, I collaborated with an artist, Justine Lee Hirten in 2019-20, to create a pictorial representation of *Canis* species in eastern North America. This diagram shows the six main types of canids: western coyotes, eastern coyotes/coywolves, red wolves, eastern (timber) wolves, Great Lakes wolves, and gray wolves. Because of the frequent separation of red wolf and eastern timber wolf in analyses, we showed these canids separately even though others believe they are the same species at opposite ends of their range, as discussed last chapter. I believe this figure is useful even with some now outdated studies (e.g., see the two vonHoldt publications in the references) that claim that the eastern wolf is not a distinct species but rather a hybrid between western coyotes and gray wolves, despite the lack of field evidence that these two species mate and produce viable offspring in the wild. In contrast, I have citations of dozens of *References* at the end of this book referring to eastern wolves as a unique species, and some of the authors, such as Bridgett vonHoldt, that produced some of those earlier studies have recently collaboratively published that the eastern wolf is indeed unique.

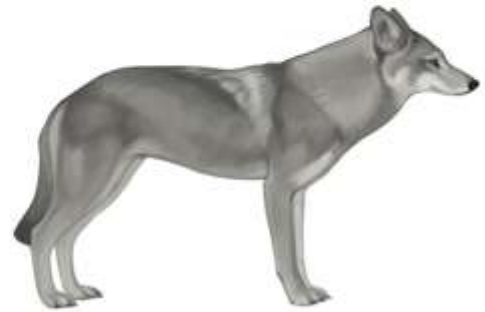
The drawing represents average body sizes of one canid compared to another. However, it is important to realize the limitations of these average depictions. Even within a given type, males and females differ in size and there is considerable variation where the size of one might be similar or even larger than the one adjacent. They may be difficult to tell apart in the field, not only from a distance, but even when captured, especially where their ranges overlap like in and around Algonquin Provincial Park, Ontario.

The similarity of *Canis* types is further exemplified by authors noting that even larger western gray wolves and smaller western coyotes (who share no size overlap and do not interbreed) are often difficult to tell apart from a distance and someone ‘shooting a coyote can sometimes result in a dead wolf’. Natural expansion or recolonization of ranges is a confounding factor. For example, eastern timber wolves or Great Lakes wolves dispersing into southern Canada and the northeastern USA are often claimed to be heavy ‘coyotes’ when killed. While this is affecting the recovery of full-bodied wolves in the Northeast, state wildlife agencies and the U.S. Fish and Wildlife Service have effectively done nothing to prevent these killings despite petitions to change hunting seasons of all *Canis* in the Northeast (see Chapter 8). The eastern coyote is not protected in the northern states that are most likely to receive wild wolves (Maine, New Hampshire, and Vermont) despite the fact that genetic testing is often the only way to accurately differentiate among these closely related canids in eastern North America.

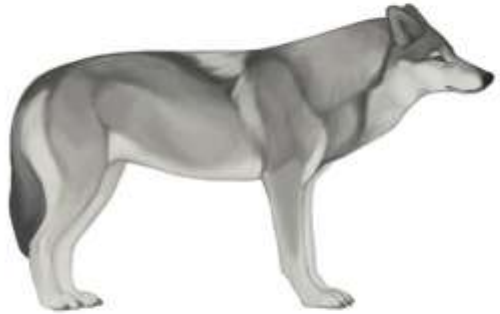
Wild *Canis* of North America

Western Coyote
Canis latrans
20-30 lbs

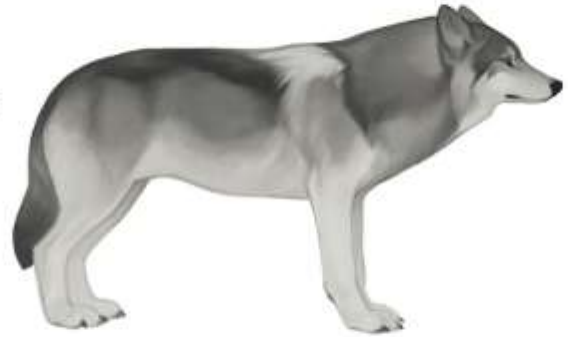
Eastern
Coyote/Coywolf
Canis latrans x lycaon
32-45 lbs



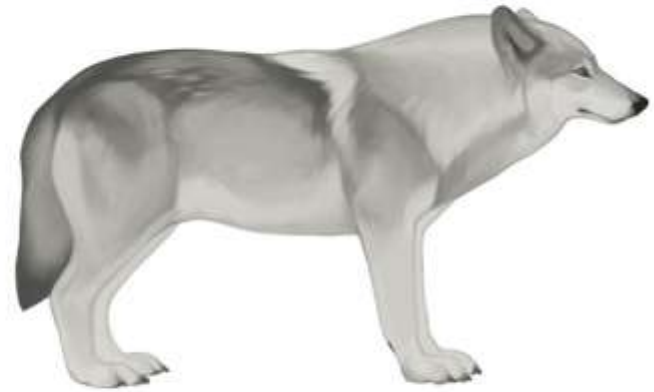
Red Wolf
Canis rufus
50-80 lbs



Eastern Wolf
Canis lycaon
60-70 lbs



Great Lakes Wolf
Canis lupus x lycaon
70-90 lbs



Gray Wolf
Canis lupus
90-130 lbs

These drawings are intended to represent average body sizes of one canid compared to another. But within a given type males and females differ in size and there is considerable variation within canids such that the size of one might be similar or even larger than the one above it making them difficult to tell apart in the field, especially where their ranges overlap. Also, while the red and eastern wolf are considered separate here, many studies have indicated that they are possibly the same species (C. lycaon) living on opposite ends of their eastern North American range.

Scientific adviser: Jonathan Way - http://www.EasternCoyoteResearch.com

The text was improved by L.D. Mech's comments.

Scientists, wildlife managers, and laypeople should now appropriately classify the five wild canid groups found in North America belonging to the genus *Canis* as: (1) western coyote; (2) eastern coyote or coywolf (east of longitude 80° which includes New England, New York, New Jersey, Pennsylvania, Ontario, and Quebec); (3) eastern and red wolf (*C. lycaon*, including *C. rufus*; drawn separately on the diagram); (4) Great Lakes wolf, which is a hybrid between eastern wolves and gray wolves (*C. lupus* × *C. lycaon* or *C. lycaon* × *C. lupus*); and (5) gray wolf.

Three possible additional genetic and morphological groupings consist of the Mexican gray wolf (*Canis lupus baileyi*), the mid-Atlantic coyote, and the southeastern coyote. Wolves in the Southwest are possibly the remnant of an early expansion of the gray wolf into North America, while research in the mid-Atlantic (Virginia) area indicates that coyotes there are a product of hybridization between northeastern coyotes/coywolves from the north and western coyotes from the west; hence they are an intermediate form between eastern coyotes and western coyotes. Mid-Atlantic and southeastern coyotes also have domestic dog genetic influence, and the southeastern coyote may also have red wolf and/or gray wolf influence as well but, overall, is more western coyote-like compared to their northeastern cousins.

With this '*Canis* soup' of different but closely related species (there is gene flow from *lupus* to *lycaon* and *lycaon* to *latrans*), distinct species status for any canid complicates conservation efforts, especially in eastern North America. Recent investigations acknowledge the importance of hybridization among closely related species and in the case of eastern wolves, there is a need for managed introgression that focusses on preserving any eastern wolf genetic material in any genome regardless of their potential mosaic ancestry composition. If such an effort prioritizes and maintains individuals that carry admixed genomes, as has been suggested, then more common animals like the eastern coyote would be an important source of greater genetic variation and potential adaptive capacity for rare canines.

Is it a Wolf or a Coyote?

One of the things from the past two chapters that you may be wondering is, what qualifies a canid as a coyote versus a wolf? Scientists had debated the same thing for a while, and some still do. It is important to remember that both creatures are in the genus *Canis* and are very closely related. The general consensus now in the literature is if a species has >80% wolf genes, then it is classified as a wolf, and the same thing for coyotes. The papers in the *References* by Benson, Rutledge, and Wheeldon all use this value as a benchmark in their research. Anything in between, that is, under 80% for either, would be called admixed or hybrid canids. Using a lower number, even 75%, as the threshold, increases the chances of finding a wolf in a region where they may be rare, like the Northeastern U.S.

One of the confusing parts about this classification, however, is what one uses as a reference population. If western coyotes and gray wolves are used in an analysis then you would get a good spread between the purest coyotes and wolves. However, if a researcher only uses eastern coyotes, eastern wolves, and Great Lakes gray-eastern wolf hybrids in their data set, which are the three predominant canids inhabiting eastern North America, then the values could be different since all three already have wolf DNA in their genetic makeup. For instance, let's say we use eastern coyotes as the baseline 'coyote' reference and one of our samples for a large canid found in the Northeast comes back as 65% wolf. That canid would be labeled as admixed when in reality it might really be over 75-80% wolf, and therefore would classify as a wolf, if comparing to a pure western coyote. If wolf samples come back as admixed when it is certain that they really are wolf-like then the 80% threshold could be lowered to say 70 or 75% to include as a wolf. Scientists should standardize this discussion so it is easier for the public to ascertain what is what in the field.

Don't Call Eastern Coyotes 'Non-Native', 'Invasive', or 'Exotic'

It is important to understand that eastern coyotes colonized the Northeast on their own four feet starting in southern Ontario around Algonquin Provincial Park in the early 1900s and moving east and south to saturate the available landscape. This was clearly aided by two factors: 1) A change in habitat conditions from forested to a human-modified and fragmented landscape; and 2) The extirpation of wolves and mountain lions which reduced competition and predation pressures. It is unfortunate that some states, like Georgia, regard them as non-native or invasive. In 2018, I signed on to a letter by the non-profit group Project Coyote condemning wildlife killing contests. We stated that 'one or more large canids have been a part of the Georgia ecosystem almost continuously for many millennia, and the native prey species have long been adapted to the presence of such a predator, whether it be gray wolf, red wolf, coyote, or indeed an admixture of those species'. It is vitally important to educate not just the general public, but wildlife managers as well, that mammals (including humans) have often expanded or contracted their ranges over evolutionary time. It was the altering of the landscape and reduction of apex predators, both caused by humans, that opened up a niche that the coywolf took advantage of. This is a perfectly "natural" process following a disturbance.

The purpose of this chapter is to show the variation and types of *Canis* species in North America with a specific focus in eastern North America. Research suggests that the eastern coyote has levels of genetic structure that are comparable in magnitude with those found between the other species of *Canis*. That said, it now seems appropriate to spend the next few chapters getting to know the coywolf by examining its ecology and behavior in the Northeast. Regardless of what we call this carnivore, it has always been doing the same thing in our backyards, neighborhoods, and wild areas since it colonized this region.

The coywolf often resembles its red or eastern wolf kin.

Comparison of *Canis* Body Types

1. The smallest *Canis* are western coyotes (*Canis latrans*) such as this one pictured in Yellowstone National Park.

1. Western Coyote

2. Eastern Coyote/Coywolf

Body type 3: Red wolf (*Canis rufus*) in captivity. The red wolf is native to the Southeastern US and is a coyote-like wolf.

Body Type 3: The eastern wolf (*Canis lycaon*) is closely related to or is the same species as the red wolf. It is found in southern Canada centered around Algonquin Park. This was probably New England's original wolf, a.k.a. the eastern timber wolf.

© Michael Runtz

Top: Body Type 4: Great Lakes Wolf (*Canis lupus x lycaon*). They live in the wild with a current population of ~4,000 wolves combined in Minnesota, Michigan, and Wisconsin.

Right: 5. Largest *Canis* is the gray wolf (*Canis lupus*). They are found in western North America with this one (and the next page) pictured in Yellowstone National Park.

5. Gray Wolves are often over 100 lbs

Gray wolves are what most people think of when they hear the word “wolf”.

Profile of gray-phased northeastern coyote, or coywolf.

Chapter 4: Trapping, Radio-Collaring, and the Importance of Research

In order to obtain accurate information on the ecology and behavior of an elusive species, a tried and true technique has been to radio-tag and release as many individuals of the species under study as possible, with thirty individuals usually being a sufficient sample size. For eastern coyotes, it is absolutely amazing what you can discover by radio-collaring them. This is also where wildlife agencies come into play as one needs a permit from the state to trap and radio-collar them. They know that this is the potential stumbling block to obtaining important biological information, because without permits it is very difficult to obtain accurate information on many ecological variables that will be discussed in the next few chapters.

A predator transforms from an urban phantom to a potential 24/7 data bank by wearing a half-pound electronic device around its neck. While that might sound a bit utilitarian, it really is incredible how much information can be collected from the 'ping-ping' sound of a radio-collared animal. Telemetried individuals help facilitate the protection of wild creatures by enabling biologists to gain considerable information about their behavior patterns and then use that information to develop sound conservation plans. The majority of my first book, *Suburban Howls*, involved discussing findings related to radio-collared subjects.

However, before tagging an animal, it must be caught. Many researchers use padded foothold (also called leghold) traps to safely capture, immobilize, and then collar their study subjects. But these traps are now illegal in Massachusetts, and a growing number of other states too, due to their perceived inhumaneness. While it might be difficult for anyone to want to envision a 'recreational trapper' walking up to a tethered animal and literally blowing its brains out, or even clubbing them to death to preserve their pelts for a mere $25 profit, it still happens. Still, leg-hold traps are a convenient tool for biologists to use to capture and study these intelligent animals.

Where foothold traps are not available, box traps, which are just about the only known legal alternative to capture canids, can be employed. I was bluntly told by many people that it was nearly impossible to capture coyotes in these traps since they would be too wary to enter an enclosed device. But fortunately for me, no one told the animals that. Using donated supermarket meat scraps as bait to lure them into the traps, and an incredible amount of effort tending the devices, I have captured six dozen of these wily creatures, including trapping some of them more than once.

Coywolves are captured in box traps. It is critical for biologists to capture and handle their study subjects in order to obtain genetic samples and attach a radio-collar to enable scientists to determine critical facets of their behavior in the field.

Predictably, many non-target species were also captured using this non-selective device, including crows, raccoons, red and gray foxes, possums, skunks, red-tailed hawks, turkey vultures, domestic cats and dogs, and fishers (also called fisher-cats, a cat-sized member of the weasel family), among others. Lots of animals like free bait! But patience and persistence paid off for the sake of research.

A full-spectrum of eastern coyotes have been captured in box traps ranging from young pups to large adult males, from skinny yearlings of both sexes to lactating females in the spring. Capturing those nursing mothers can be equated to finding "gold" for a canid biologist since these are the really important members of a given pack. Assuming they survive for a decent period of time, say 2-3 years or longer, you will get to understand the way of that pack pretty well as those breeders lead the pack. The alpha, or breeding, male and female lead the pack and the majority of pack members are their offspring of varying ages. This is true in most wolf packs as well.

All and all, I have had the good fortune of seeing over fifty individuals up-close and personal. I am repeatedly struck by their beauty and their penetrating eyes, and by society's general lack of appreciation of their exquisiteness. Although this is changing and I am finding that more and more people are fascinated by them, especially at my lectures. Nowadays, it is nearly unanimous that when I mention a coyote dying at the hands of a human, most of the crowd becomes upset about how they are treated with long hunting seasons and few restrictions on their take. While I generally talk to conservation-minded people so that might be expected with a bias from that type of crowd, I also give many talks at libraries where people attend from all walks of life, yet the same reaction is almost always garnered.

What Happens Next?

While all non-target captures are released on the spot, once a coyote is captured the job of a researcher is to sedate the study subject to enable their safe handling. Immobilization can be done in the field or at an established veterinary clinic. The animal receives an intramuscular dose of tranquilizer and is handled only when fully asleep.

I have been fortunate to work with Drs. Larry Venezia, Paul McCartin, and Kevin Smith at the Hyannis Animal Hospital, the veterinarians and vet-techs at the Cape Wildlife Center, and Dr. Bob Binder at the Saugus Animal Hospital over the years. They have been tremendously generous with their time, resources, and professional expertise as they assist in the handling process. Simply put, my research would not have taken place without their collaboration.

Many animals enter baited box traps including red-tailed hawks (*top left* and *top middle*), raccoons (*top right*), fishers (*bottom left*, believed to be one of the first live ones documented on Cape Cod in 2006), and red foxes (*bottom right*), another member of the *Canidae* (dog) family.

Once sedated, many body measurements are taken such as their total length, lengths of tail, body, feet and pads, as well as height, canine teeth length, ear height, and snout length. The animal is also weighed, pictures and video are taken, blood is drawn for DNA and disease analysis, and then a radio-collar is placed on the animal. The collars my team has used are some of the highest quality transmitters available, and are fairly light as well, weighing between one or two percent of a coywolf's body mass. That would be equivalent to a human wearing casual summer attire.

It should be noted, however, that not all animals can handle a radio-collar. Juveniles and species with streamlined body shapes like otters usually receive an internal radio-tag surgically implanted into the abdomen. Other animals, like turtles, have a transmitter glued to the shell. Larger animals like elk or moose may receive an ear tag with a built-in transmitter, which precludes the animal from having to wear a bulky collar.

After about an hour of being sedated, the animal starts to gradually wake up from the tranquilizer. Although this can vary depending on dosage amount and type of drug used. If they are processed in the field, the researchers supervise the animal for their safety and wait for them to regain their footing and wander off into the woods. Determined to exhibit the highest level of responsibility for my study subjects, I believe leaving helpless animals to wake up on their own would exhibit questionable scientific procedure and provide preventable hazards to the study subjects, especially in urbanized areas. Thus, I keep them in an enclosure – the trap they were captured in or a dog transport cage – and release them only when fully awake, usually close to dusk or at night.

Radio-Tracking Surprises

Radio-telemetry is a technique used to study animals by remotely tracking a radio signal emitted from a transmitter (the collar or other mounting device). A researcher can track the signal and the animal's location by tuning a specially designed receiver to the transmitter's specific frequency using a directional antenna to pinpoint the animal's bearing. This is the case for VHF (very high frequency) transmitters that are ten times cheaper and last much longer than the GPS (global position system) collars that most people imagine on an animal. However, with a VHF collar, one needs to be actively in the field tracking the animal; you can't receive locations in your office like you can with a GPS transmitter.

Coyotes are sedated (*top left*), taken out of the trap (*top middle*), carried into the veterinary clinic *(top right*), and placed on a digital scale which also serves as an exam table (*bottom right*), and then are given a radio-collar (*bottom right*).

Trained veterinarians assist with examining eastern coyotes (*top left* and *top middle*), drawing blood used for DNA analysis (*top right*), and radio-collaring with a finger-width fit (*bottom pictures*).

Using this equipment, a biologist drives around in a designated search pattern until picking up the ‘cluck-cluck’ sound that the transmitter emits on the receiver. This is analogous to a radio system in a car; the closer the subject is to the radio-station, the stronger the signal. However, the major difference is that all of the study animals produce the same sounding ‘beep-beep’ or ‘ping-ping’, so it is imperative for a researcher to memorize the specific frequency of each tagged individual under study rather than simply dialing the tuner to pre-established favorite stations.

A researcher can experience a problem when more than one animal has the same frequency in a given study area. I was once radio-tracking a breeding female coywolf who had recently lost her territory to another female who was assumed to be one of her own adult offspring. The former matriarch-turned-nomad used a large area and I often opportunistically kept the receiver set to her signal when not tracking other collared individuals. One day I detected her signal within about a mile of my own house in a residential area. It sounded odd to my practiced ear, so I parked at a nearby driveway, talked to the homeowner, and then walked in on the signal. This signal was essentially motionless in a yard without much brush for a coyote to hide in, so I half expected to see it dead. To my surprise, my search honed in on my former high school teacher Dr. Peter Auger’s radio-tagged wild box turtle sporting a glued-on transmitter!

Radio-tagged subjects are tracked at all times of the day and night to gain an accurate representation of their behavior during a 24-hour time span. Because most of the Northeast is forested, animals aren’t usually directly observed, even when radio-collared. Rather, a bearing is taken in the direction of the strongest signal at two or three different locations.

The power of radio-telemetry is really impressive. My book *Suburban Howls* discusses many anecdotes regarding coywolf ecology and nearly all of them involve radio-tagged animals. Since VHF collars broadcast 24 hours a day, and typically last three to four years for a medium-sized transmitter, biologists can paint an accurate and detailed picture of what individual animals do over the course of part (or potentially most) of their lives. Nothing substitutes for being in the field, and the more a researcher tracks, the more they learn about their study subjects.

Now that it’s clear that researchers can capture, collar, and radio-track a coyote, it’s time to learn about some of the major findings that can be discovered from studying transmitting individuals in the wild. This is the subject of the next chapter.

Once animals begin to wake (*top left*), such as this lactating female, they are placed back in their capture traps until they are fully awake (*top middle* and *right*). They are then transported to their original capture sites (*bottom left*), and usually waste no time in running away from people once released (*bottom right*).

Top: The exact same technology is used to radio-track many other wildlife species, such as this box turtle.

Right: Eastern coyotes, like western coyotes and wolves, have piercing yellow or brown eyes that seem to be looking through you rather than at you.

Once released, the job of a biologist is to repeatedly find their radio-collared subjects such as this one dubbed “Cake” (ID# 0204), named for coming awake while being handled. She lived in the Centerville area of Barnstable for years. Photo by Tom Williams.

Chapter 5: The Way of the Coywolf

This chapter, borrowing the title of a book written on gray wolves by world-renowned biologist Dave Mech, explains the behavior and ecology of eastern coyotes in the wild. Here we will discuss five major findings of canid sociobiology, all of which are possible through the use of radio-telemetry:

1) Home range and territoriality
2) Sociality
3) Activity patterns
4) Den and rendezvous site behavior
5) Movement patterns by both residents and transients

Home Range and Territoriality

Home range and territory are two closely related words. Home range is technically the area that an animal uses, while territory is the part of the home range that is guarded from others. Because wild canids are about as territorial as a species gets, most of their home range is also its territory. These areas can average five to ten square miles in suburban areas and fifteen to twenty in more rural areas like northern Maine and southeastern Canada. On Cape Cod, I've consistently observed them use large areas of around 8-10 square miles. This means that one canid family can claim a large amount of real estate. It also means that there are a lot fewer coyotes than most people think.

With regard to coyote populations, it might seem reasonable that killing them can reduce their numbers. But this is actually not as straightforward as one may think. Research has found that adults actively guard the perimeter of their exclusive domains. I have personally witnessed a couple of instances where an average size territory was later subdivided into two different territories following the death of the former controlling breeding male. In both new territories, the pack sizes were the same as the previous male's one family. The only thing different was that each new pack used a smaller territory, and thus the species lived at a higher density in that area.

A new logical view is that leaving wild canines alone, by not hunting and trapping them, can actually cause their numbers to stabilize or even decrease in an area where all available habitat is saturated by territorial groups. The reasoning behind this is that older, well-established individuals effectively guard considerably larger areas from other packs, and young animals learn pretty quickly that the area is occupied and to stay away. This territorialism precludes the need for people to try to manage or kill them to reduce numbers, unless there are specific individuals causing problems. It is important to recognize that a "problem animal" is a human defined term that can vary by person. For instance, most would agree that a coyote approaching or biting people is an issue that has to be dealt with, but one coming into neighborhoods at night eating free-roaming house cats would be a nuisance for some but just Mother Nature doing her thing for others.

Just how do they guard these territories? There are three main ways this occurs. The first and the loudest, is howling. Canids howl to communicate with their family (e.g., "I'm over here, where are you?"), rally the pack, probably for the simple joy of it (why do people sing?), and to warn others of their kind that "we are here and don't think about coming over."

When howling, groups often sound like many more animals than there actually are. In other words, just a few animals can sound like ten because they change their intonation, pitch, and even volume while howling. People from rural areas of New York, New Hampshire, and urban areas of southern New England often email me that they hear 'huge packs' of coywolves howling at night, when in reality it is likely a standard group size of three to five animals.

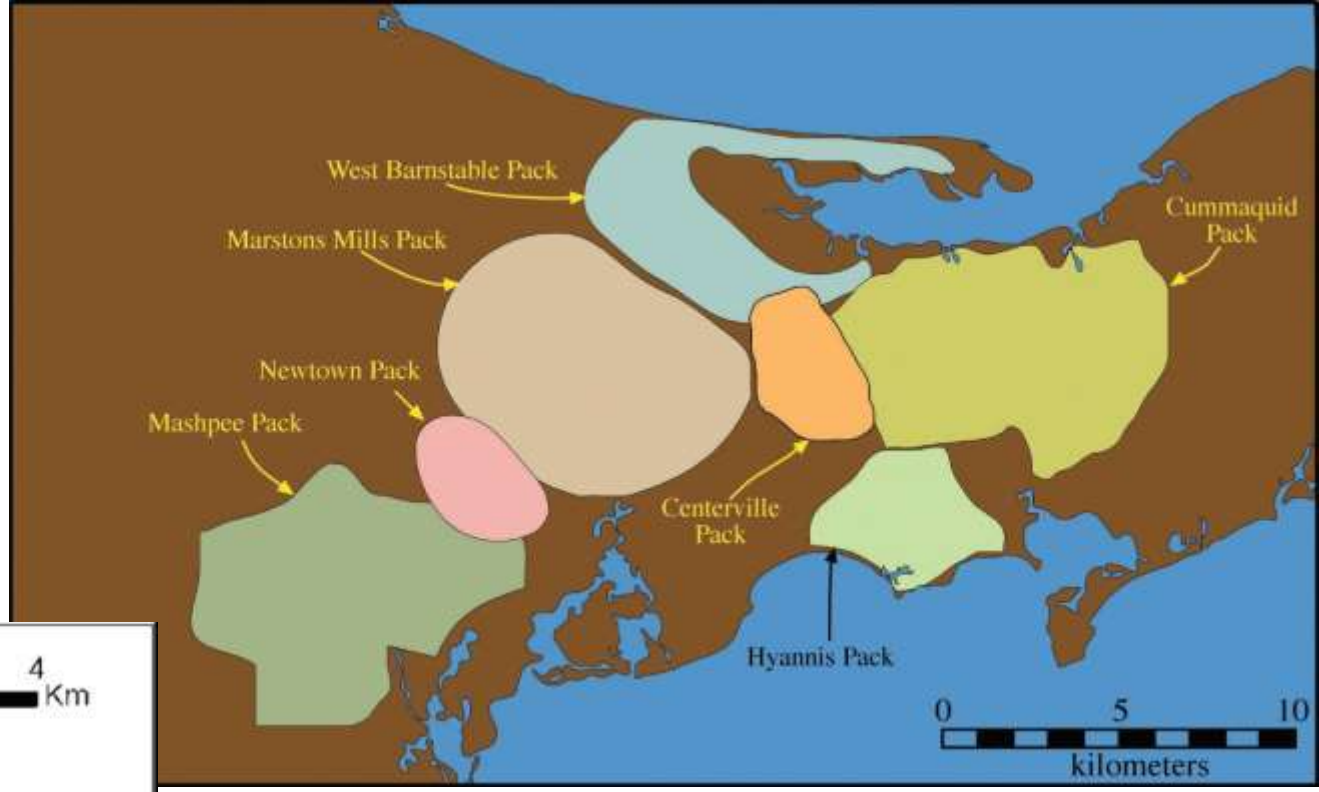
Coyotes also scent-mark to warn other animals of their presence. Canids often deposit their urine and scat (poop) more often at the perimeter of their territory where it produces a higher encounter rate of trespassers, giving fair warning of their presence. Males may also raise-leg urinate (RLU) over prominent objects like a stump or raised patch of dirt, while females flex-leg urinate (FLU) in a similar manner. They tend to mark, with both urine and scat, around the junction of trails they use to maximize the chances of being detected by other wild canids. This is useful for biologists studying food contents, as finding their scat is certainly easier at these locations than in random spots in the woods.

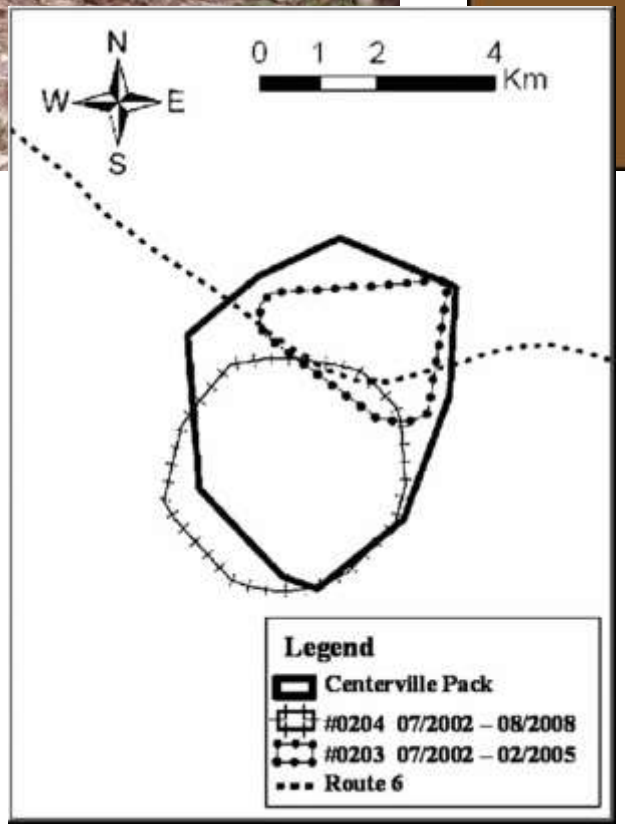
A by-product of marking behavior can be seen with domestic dogs, who often urinate on a telephone pole. In this scenario, it seems to be a modified but instinctive scent-marking technique where most domesticated canines are doing it more to communicate with each other rather than guarding an area from rivals. In either case, given the remarkable ability of a canid's nose, it is likely that they can recognize each other as individuals, which probably facilitates the designation of mutual boundaries between packs.

Finally, if howling and scent-marking do not work, then direct confrontations surely elicit territorial pack behavior. This can range from chasing a trespasser to outright killing it. I even suspect that some lone transients without pack affiliations generally hunt and travel by day – and this could explain daytime sightings of healthy animals – to avoid family groups that hunt and travel by night. Although same species killing does not often occur with coywolves (but see here) and eastern wolves, it is actually the most frequent cause of death for gray wolves in protected areas like Yellowstone and Alaskan national parks.

An example of territoriality can be found on my website's 18 February 2008 Field Update entitled *Battle in the Suburbs*. Here I witnessed two radio-collared packs confronting each other at night on Cape Cod. Both groups had a radio-collared breeding female. One of them was traveling with her mate while the other was in a pack of four. Both were at the mutual borders of their adjacent territories along the western shore of Lake Wequaquet, which divided the Centerville and Hyannis Packs. It was chaos as I was picking up both signals strongly in the same area. All of a sudden, I saw the shadow of the female from the Centerville pack as she flew across a road with her mate, heading west back into the heart of her territory. Seconds later the other breeding female and her mate, followed by two associates, crossed the same stretch of road following them with their tails very high – a sign of confidence. They were scenting the pavement and could certainly smell the rival pair as they chased them. I was in my vehicle using night-vision options to watch them in the dark so I had to really focus to follow them.

About two minutes later, the more dominant Hyannis pack re-crossed the road back to the east as if comfortable that the rival group had departed. Then about five minutes afterward they erupted into a loud group howl. They were clearly using all of this energy in the dead of winter to stake claim to that area. As I continued to track the signals of the two collared animals, they were miles apart just an hour later. This anecdote further illustrates that leaving older territorial canids alone can actually maintain populations at a stable number as they are downright determined to keep non-pack members off their turf!





Top Left: Packs howl to protect their territory and guard it from other social groups.

A map of eastern coyote territories on Cape Cod, MA shows little overlap (*top right*; brown is land and blue is water). Sometimes territories even decrease in size when breeding adults in the original pack are killed (*bottom*; see original Centerville pack in *top right* figure).

Top Left: A typical pack has four members: the breeding pair and their offspring who delay dispersal to live in their natal territory. *All pictures*: All coyotes are social when given the chance, often interacting with pack-mates.

Sociality

In a basic canid pack, the male and female are the breeding residents and usually parents of the remainder of the family. They are often called the 'alphas', but that term is becoming outdated, since a pecking order to establish dominance in wild situations is rare, especially when the breeding pair are usually the pack leaders. The term, as Dave Mech has explained, was derived from the behavior of captive wolves where the animals cannot escape each other so there is a legitimate pecking order, and it has stuck with the public as common, but inaccurate, terminology. However, in places with a lot of food there is indeed this type of hierarchy, like in Yellowstone National Park, where packs are often bigger and more complex with more adults than just the nuclear breeding pair.

A pack is defined as at least three canines living together. An average pack size by mid to late winter in the Northeast consists of three to five coywolves in a given territory, with 3-4 more the norm. In addition to the breeding pair, there are other resident animals who are generally called 'betas', 'associates', or 'helpers'. These are usually one- to two-year-old offspring of the resident breeders. Where there is a lot of food, a pack may number six or seven animals. In summary, a social unit usually includes the breeding pair and one or more helpers who remain with the family for a year or so. They all raise the next generation of offspring when spring comes.

The average litter size for breeding female eastern coyotes is five pups. The associates who remain with the parents will babysit, hunt for, and otherwise help raise the following year's younger litter members. They are a true family. By mid to late fall, some associates, as well as some of the juveniles, begin the process of outgrowing and moving on from their natal territory, a term called dispersal.

Fall is the time of year when pack size appears the largest as the pups and older offspring may not yet have left their natal territory. It is realistic that one could see ten animals together during autumn, possibly consisting of four adults and six 6-month old juveniles, most of whom are full-grown and certainly look like mini-adults. The pack usually breaks up by mid-winter due to dispersal, death, and a host of other reasons, to produce the typical three to five animal pack size in a given area.

Packs are dynamic, with membership changing often. Most associates/helpers in their second year normally leave their parents to go in search of their own territory. With high mortality rates, young animals often do not survive their first winter alone. But, as we've discussed, some maturing juveniles do not disperse and will remain with their parents to form the core social unit of the pack.

Larger families may live in areas with more access to food, like I discussed with wolves in Yellowstone, but three to five individuals would be an average pack size and they would typically live on ten or so square miles of land. This translates to a rough density of one animal per two or three square miles, not including the nomads who travel and in around existing territories.

Activity Patterns

Wild canines are intelligent animals and have survived successfully alongside humans by being adaptable. Throughout the suburbs of the Northeast, for instance, research overwhelmingly shows that coyotes are largely active at night, and that is no doubt because they have learned this is when to be most active when we aren't.

In forested areas of the Northeast, however, they may show considerable activity during the daytime. This is also true about western coyotes where they are undisturbed by people, as in many of our national parks. What the research is essentially saying then, is that coyotes can be active at any time of day. Seeing one during the daytime does not necessarily suggest it is unhealthy or diseased. It simply means that it has learned it can fulfill its daily activities during this time frame while avoiding the dangers of confrontations with humans or the local nocturnal packs.

One exception to nocturnality for coywolves in anthropogenic landscapes is during the summer when they are raising pups. During the course of my studies of suburban coyotes, I frequently documented them to be active any time of the day or night during pup raising.

From April to August, the drive is strong for pack members to regularly return to provision for their pups. This is especially true for the breeding female during the first six to eight weeks of the pups' lives when they are nursing. Sometimes they will end their nightly foraging a few miles away from their pups, and often on the other side of their territory. There they may bed down after dawn in a wooded area and get some much-needed rest. In the instances when I waited them out until they woke up from their day-time siesta, I documented them heading right back to their pups in the middle of the day.

Coywolves, especially in urbanized areas, generally rest during the day. A yawn (*top right*) signals that this coywolf is ready to sleep (*top middle* and *top right*) so it can be active at night with its mate (*bottom right;* photo by Tom Williams).

While some people might be concerned about such diurnal sightings, it is clear that the parents are compulsively drawn back to their young, as they then return to them in as direct a line as possible. Provided with the details of the situation, it wouldn't be anything a nursing human mother wouldn't understand. It is amazing that more conflicts do not arise, and it is probably because canids are normally so timid (especially during daylight hours) and are only up and about because of the drive to fulfill a basic biological need of returning to care for their litter.

Furthermore, during the summer it may be dark for just eight hours a day in the Northeast, explaining why coyotes need to be active at least some time during diurnal hours. Of course, there may be exceptions to this behavior, as some individuals might become accustomed to being fed by humans, whether via deliberate feeding, by leaving bird or pet food outside, or by people inadvertently throwing out or composting food scraps. These scenarios might explain why wild canids might be active seeking food during the day, but these are exceptions to the rule and an illustration of why people should never encourage human-coyote interactions.

Den and Rendezvous Site Behavior

Nothing is more exciting for a canine family than the birth of new pups. All members of the pack assist with pup rearing, and after the pups are weaned, helpers and breeding males often spend just as much or more time with the pups as the mother does.

The process begins in the cold depths of mid-winter when the breeding pair mate by engaging in a copulatory tie − they are physically locked together − for upwards of twenty minutes just like domestic dogs. Thereafter, pairs often travel together, except during the summer when they must take turns tending to the pups. In winter, however, males doggedly (no pun intended!) follow their mates.

Following a short two-month gestation period, puppies are born between mid-March and early-May. In warmer regions of the Northeast, such as southern New England, research has shown that pups are born on or around April 1, while in northern New England (Maine, Vermont, New Hampshire), pups are usually born later in the month.

Wild radio-collared eastern coyote on alert, with pups in the woods behind it.

By following radio-collared animals, one can learn when and where they localize. Discovering that some of my study subjects localized and gave birth in mid to late March was a new finding and about a month before pups were born in Dan Harrison's study site in Maine. The first time I documented this was when I followed a mated pair who were both radio-collared. The female was a small 30 pound animal who traveled with a large 45-49 pound (he was captured twice) male. I was wondering what they were up to as they were bedded for two days in a row in the same place in a watershed in Hyannis on a cool misty day on the first day of spring in 2001. The conditions allowed me to quietly reach their bedded location downwind, meaning they could not smell me. When I got about 20 feet away from them, their radio-signals were very loud. Suddenly, the robust male jumped up and almost seemed shocked that a human was so close. Not seeing the petite female run off with him, I immediate became nervous that something happened to her. Then, about ten seconds later I spotted a hole in an open part of the woods dominated by green briar and lowbush blueberry underneath a canopy of pitch pines. I peaked in with a flashlight and saw her staring at me and could hear the purring of newborn pups. I quickly retreated, shocked that I walked right up to her birthing location.

Under normal conditions, only the breeding female mates and gives birth. This can change if the breeding male dies, as the new incoming breeding male often mates with both a mother and her young adult daughter(s) which is unrelated to him. Females give birth to five pups on average, but that can range from two to ten depending on the age or health of the female and food sources within the pack's territory.

Dens are located in secluded areas under the roots of trees, in caves, under boulders, dug into the side of a hill, or sometimes even under human structures like a deck or shed. The pups will remain there for a month or so until they outgrow it, unless the parents move them to a new site earlier. This is a good example illustrating their intelligence and planning skills as they need to know where to move the pups in advance and will execute that action at a moment's notice upon necessity, like when a human or predator intrudes at the active location. Most families dig multiple dens in advance, making it quicker to switch sites.

During the first month, the pups remain mostly inside the den with their mother who nurses them and keeps them warm. Their eyes open at about two weeks of age, and they begin crawling around three weeks. At about four to five weeks of age, the pups start poking out of the den, and they begin to receive regurgitated food from the rest of the pack, especially from their father, the breeding male. Yum!

Members of the genus *Canis* mate in mid-winter (*top*), engaging in a copulatory tie (*top right*). Pups are born two months later usually in a sandy area (*bottom*) dug into a six to eight foot tunnel with a central chamber in the rear of the den (*bottom right*). Note pups in the back of the den.

Pups become active at around one month old when they begin exploring outside of the den and interact with siblings, thus learning the way of the coywolf at an early age.

All members of the pack take care of the pups, a fact that was illustrated by one of my study groups. After the radio-collared breeding female in the Centerville Pack was hit and killed by a car when her pups were about eight weeks old, the breeding male and a helper raised the four pups through their first fall. Five to six months old is the age of independence when pups can theoretically make it on their own, meaning that the pups survived without their mother present when they were approximately two months old.

Shortly after the increasingly active pups are weaned around two months of age, they outgrow the various dens they have used up to that point. It is then, in early-summer, when they move to what are called rendezvous sites. I like to think of them as 'puppy training centers', because they are areas above ground that are used as meeting, foraging, and resting sites for the whole pack. And this is where the pups begin to be socialized in pack etiquette learning discipline and hierarchy, and it is where they enjoy regurgitated meals and experience all the other joys of puppyhood, such as long play bouts with siblings. The young transition from needy puppies to independent adolescents, all within a few months.

The best rendezvous sites consist of a diversity of habitats in a small area, including thick brushy cover near water, on high ground or in open areas so adults can spot danger, and places with good hunting opportunities. Examples of these summer home-sites are many throughout the Northeast and include cranberry bog complexes, fields, capped dumps, blueberry barrens, sand pits, and beaver-created ponds/meadows next to watercourses. While not all packs have open areas like these within their respective territories, June and July may be the best time of year to observe them in ideal locations.

While some rendezvous sites can just be a simple extension of a den site whereby the pups use progressively larger areas, most are separate areas that the adults take them to. This can even involve a trip of a couple of miles. They are easy to find with radio-collared adults because they are predictable in their movements, dotingly returning to these central hubs of activity. This is also the time of year where most dog-coyote confrontations occur. Coywolves, while prone to run away from a single human even near their pups, will stand and guard their pups from an unleashed dog. In Yellowstone National Park, I have even seen western coyotes chase grizzly bears and wolves away from their pups so it doesn't take much imagination to think that a larger eastern coyote will be aggressive to relatively hapless domestic canines.

Pups are very active and often interact with each other to establish dominance and to play. Both are vital activities for gaining the coordination they will later need as adults.

Pups spend the majority of their time interacting with siblings, including wrestling and chasing each other. These skills train the pups to gain the coordination and speed that they will later need as adults.

Coywolf pups chasing and leaping during bouts of play (*top left*), and establishing a dominance hierarchy (*bottom right*).

Pups are moved to rendezvous sites in mid-summer where the adults regularly return to feed and take care of them. Notice the adult regurgitating to the pups.

Dog owners can become understandably nervous during such an encounter until they learn the reason why. The simple solution of leashing dogs usually prevents negative confrontations – although sometimes coyotes will follow dogs even on a leash until the dog and their owner have left the vicinity of the pups at a rendezvous site. Often the coyotes will just turn around after a set distance away, often a couple of hundred meters, and head back to where they came from.

By October or November of their first year, six to seven-month-old pups have matured to nearly full size and start expanding their movements while still remaining within their parents' territory. They often return to core areas such as old den and rendezvous sites, which no doubt facilitates pack members reconvening with each other. During this time, some pups begin the dispersal process, while others continue traveling with their parents, eventually becoming helpers the next year.

Movement Patterns by Residents and Transients

Residents

The movement patterns of resident individuals tie in with much of what has been mentioned about coywolf ecology, completing the puzzle. It may be the aspect of canid ecology that is most extraordinary. Simply put, wild dogs know how to move, traveling ten to fifteen miles a night. While it may not seem like it's very far, try doing it yourself! What is perhaps most impressive is considering how a normal pack size of three to five members equates to approximately 50 miles of tracks per night per territory. Canids probably know the land better than nearly any other resident animal.

A single animal or pack of coywolves can be seen and heard in widely divergent areas within a respective territory even during the course of a single night. In urbanized areas, it may seem like they are everywhere, howling in one neighborhood here and another there, when in reality it's the same few animals of a local pack doing a lot of moving around. This is necessary for them to maintain control of their territory. But this is also why people think there are many more wild canids in a given area than there really are.

The fact that a social unit can traverse hundreds of backyards and many neighborhoods in a suburban area in the course of one night is impressive considering that they do that day after day. Another pack can cover miles of logging roads in the managed forests of northern New England. A deer hunter encountering a fresh dusting of snow in the 'North Woods' may be taken aback by all of the tracks, without seeing the big picture.

Wild canids are renowned for using human altered areas such as power lines, railroad tracks, logging roads, and even paved roads, and use them to their benefit. These structures act as travel corridors and ease their movement across large areas. Their scent marking at the junctions of these structures facilitates the maintenance of their territories. They've been even documented traveling on bridges as a regular part of their movements, or when dispersing to new areas.

The coywolf's movement potential is an important factor to consider when avoiding pet conflicts with wild animals. The next chapter, *Living with Canids*, explains why their wide-ranging motility requires pet owners to be vigilant of their domestic animals to avoid unnecessary adverse interactions with them.

Transients

A young coyote, either a juvenile in its first year or a helper in its second, eventually disperses, unless it somehow inherits or usurps its natal territory from its parents. Dispersal involves leaving the natal or birth area that the young animal is familiar with and striking out to find its own area where it will theoretically locate a mate and start its own pack. Dispersing individuals are called nomads or transients.

Transients are animals living outside of a pack – usually young adults, but also some older animals that may have lost a mate or territory to others. Not a lot is known about transient behavior, mostly because they are so difficult to follow when dispersing, even when collared. Since coywolves are common in the Northeast, it is likely that transients must weave through and around existing territories trying to forage while avoiding confrontations with local pack members, all while looking for a vacant place to call home. Transients may occasionally interact with both residents and other nomads, but largely, they seem to travel alone.

The journey of a transient can potentially lead it hundreds of miles from their place of birth. One born in Maine, for instance, could end up in Vermont, New Hampshire, New York, or even Massachusetts. Animals that I followed ended up in different areas of the state, and that doesn't include multiple tagged individuals whose fate I never learned.

A coyote born in an urbanized area can travel through or end up settling in a very rural area, and vice versa. Thus, categorizing a coywolf population as either urban or rural merely reflects where the individuals in that given area currently live; it means nothing with regard to where they might have come from or where they might end up. However, research has shown that dispersing coyotes often look to settle in habitats similar to where they were born with populations showing genetic structure based on where they live not distance or barriers. This is called natal habitat-biased dispersal.

Life is certainly easier for a youngster if it colonizes a new area that has a low density of other coywolves and thus has many vacant territories. It is much more difficult to find and establish a home range in an area with a saturated population, which is currently the case throughout the vast majority of the Northeast.

This applies nearly everywhere except where coyotes are continually and heavily hunted. Territories in such regions are commonly left temporarily vacant due to this persecution, but might be claimed within a few days or weeks when a transient happens along unaware of the dangers and tries to stake claim to the area. Dispersing to new areas is precisely how coywolves colonized the Northeast in less than a century, from northern New England southward. If a territory is not guarded by resident packs, dispersing individuals can quickly move into it. This biological phenomenon is also why there are areas where people kill large number of coyotes, sometimes bragging about 'taking the alpha pair first', because transients are often seeking areas without resident animals present.

Because so many transients are waiting to colonize vacant areas, it is virtually useless to kill them to try and eliminate them from a given area. It just doesn't work. Only the presence of resident coyotes or larger wolves, where they live, can effectively prevent the influx of nomadic canids as they constantly patrol their home range.

It really is amazing how far loner canids can travel! A case in point occurred in 2008 when an eastern (gray) wolf was killed on a farm in central Massachusetts after killing livestock. It had likely traveled over 400 miles from the nearest wolf range in southern Canada and probably moved through all of Vermont and/or New Hampshire before meeting its demise. Now that is moving!

In this chapter, we learned a lot about eastern coyote ecology. Next, we are going to apply this knowledge to come up with commonsense strategies to coexist with this adaptable canid.

By the end of the summer, the young of the year have transformed from dependent puppies into independent adolescents, appearing like mini-adults at four to five months old.

Coywolves are very efficient travelers, moving many miles a day through neighborhoods (*top left*), in deep snow (*bottom left*), and as a pack (*top right*). However, not all survive their travels, as vehicles kill many of them (*bottom right*) in urbanized regions of the Northeast.

Chapter 6: Living with Canids

Many people want solutions or advice to avoid encounters with or protect their pets from predators. Thus, it is necessary to take a minute and address some reasonable tips on how to avoid negative interactions with them. A one-sentence summary of this chapter is actually quite simple: To avoid most unwanted situations from occurring with any carnivore, don't feed them, do leash your dogs, and don't let your cat outside – after all, cats are essentially wild animals (hunter to some, prey to others) when outside the perimeters of their own yard.

Coyotes are medium-sized canids and are opportunistic in their feeding habits. Thus, it almost goes without saying that they will gladly clean up deliberate or unintentional offerings of food, including pet food left outside, unsecured garbage, bread for birds, seed or suet at feeders (which has animal fat as a main ingredient), unsecured compost, dead livestock, road-killed animals, or anything else that humans offer, wittingly or unwittingly, in our suburban environs. Human-dominated areas are ecosystems in their own right and coywolves often benefit from our modifications to formerly natural areas throughout the Northeast.

The two biggest concerns that most people have is "will they eat our pets?" and "are they dangerous?" The question of coyotes eating pets is a relative one. When people let their domestic pets outside unrestrained they essentially permit them to interact with nature. Cats, for instance, will hunt just like coyotes do. In fact, domestic cats have caused declines of more wildlife than just about any other species besides humans. So, coyote predation of or avoidance of natural areas by cats can be seen as a good thing for the ecosystem. While eastern coyotes might occasionally snatch an unrestrained house cat for food, it is important to realize that the majority of their diet are medium-size wild animals like rabbits.

A coyote's interaction with domestic dogs is more likely motivated by competition since they are both canines. Thus, preventing dogs from coming into contact with their wild cousins is the best way for them to coexist safely. This can often be as simple as leashing dogs, which is a law in most communities, and being outside with them, especially at night.

Eastern coyotes are skilled hunters who stalk (*top left*) and hunt their prey, mostly small to medium-sized mammals (*top right*). However, they are afraid of people and generally run from them at first sight (*bottom*).

Relative danger

The relative danger of coywolves in the Northeast is better understood using the following statistics to keep the danger in perspective. In my book *Suburban Howls,* I reported some startling information from the Centers for Disease Control that bears repeating:

- There are 4.7 million dog bites per year in the U.S. annually.
- 800,000 of those people need medical attention.
- 1,000 of those end up in the emergency room every day.
- Altogether, ~20 people die per year from domestic dog attacks.

Meanwhile:

- There have been 10-12 coyote-caused bites in Massachusetts' history and most of those animals were rabid. Thus, the attacks were not random.
- All other states in the Northeast report under a handful of attacks, if any.
- There are about 3 attacks/bites on humans per year in all of North America (NA).
- There have been 2 coyote-caused human fatalities in recorded history in all of NA.
    - One was a fatal attack in 2009 on a young adult in Nova Scotia and the other happened in California in the 1980s; the victim was a three-year-old.

I have radio-tracked many eastern coyotes throughout suburban areas, as discussed at length in my book *Suburban Howls*. These animals commonly bed down during the day, even within view of human residences. One particular 45-pound individual liked resting in an affluent neighborhood in bushes right near a family's trampoline. The children would play until dusk completely unaware of the nearby canid. And as it grew dark outside, I would document him getting active and beginning his nocturnal foraging bouts just as the children were going inside. It was obvious if he had any intention of hunting children, there would have been an incident right there at some time or other. And such an incident could practically have taken place anywhere in the Northeast if these animals were so inclined.

It’s readily apparent that the relative danger of living with these creatures is actually quite small. Still, they are a good-sized wild predator and potentially dangerous, but more so to pets than to humans due to their being carnivores. It is always safe to be precautious and prevent unwanted events from happening.

Avoiding interactions from occurring

Common sense ways of avoiding interactions include:

1. Do not permit dogs, especially small breeds, loose outdoors without constant and close supervision. If needed, only do this during daylight hours when wild canines are less apt to be active.
2. Fences should be at least 5 feet tall and with no places where coyotes can crawl or dig underneath. While a fence does not guarantee total protection, it is a good deterrent to carnivores who may snatch or harm pets left alone.
3. Dogs should not be tied outdoors unfenced and unsupervised in coywolf-prevalent areas. Accidents have happened. Avoidance is the key to ensure coexistence.
4. Cats should be kept indoors or supervised in the yard, especially at night when coyotes are most active.
5. Dogs and cats should not be left outside for ***any*** period of time unsupervised, especially at night, even in a fenced enclosure. Given their ubiquitous presence throughout the Northeast and the fact that coywolves routinely move huge distances, it is only a matter of time before one might confront your unsupervised pet.
6. Don’t be misled – invisible fences do ***not*** protect your pets from either human or animal intruders. They are designed to keep your pet in your yard, not to keep other animals out of your yard, and they could potentially make your pet an easier target for a predator.

Pet owners need to realize that these coyote-pet confrontations are ultimately our fault, not the animals involved. Simple precautions outlined in this chapter will prevent negative situations from happening.

The following standard Do's and Don'ts in 'coyote country' are offered to decrease the occurrence of negative human/pets-wildlife confrontations:

1. DO chase wild animals away by making noise like banging pots and pans, shouting at them, and clapping your hands loudly, if you don't want them in your yard. Of course, if you don't mind them, then watch them quietly, preferably from indoors.

2. DO make noise when you are outside, especially if coyotes are often in your area, like having a den site nearby. They will often change their course of direction when they hear people and move away without ever being seen. Bring a whistle, large stick, or horn to scare them away from you, if that would make you feel more comfortable.

3. DO NOT feed wild animals. Even feeding birds may attract animals like possums, skunks, raccoons, and rodents. Coywolves may then show up also, either looking for an easy handout, or because of the smaller prey animals the seed is attracting.

4. DO NOT feed your pets outside for the same reason as #3.

5. Talk to your neighbors about not feeding wildlife. Predators travel tremendous distances and a wild canid hanging around your neighbor's yard will surely eventually check out your yard. A habituated coyote is a potential problem.

6. Absolutely DO NOT let your cat outside if you are truly concerned for its safety, as well as your smaller wild neighbors that your feline might hunt. Eastern coyotes are just one of many mortality factors for outdoor cats.

7. DO leash your dogs. Although coywolves may follow a leashed dog out of curiosity (to the concern of the handler), it is extremely rare for them to actually get within contact of your pet if you are next to them. This simple piece of advice is critical.

In February 2020, I was walking my 40-pound cattle dog-mix in the dark in my semi-rural backyard and stopped to relieve myself. My dog ran ahead of me onto the powerlines bordering my property and immediately came into a tangle with a coywolf. He started yelping, making an awful sound, and I sprinted and caught up with him and heard animal footsteps in the woods. My dog still limps nearly a year later likely having a tendon pulled during the melee. This all could have been avoided if he was leashed. I blame myself for allowing that interaction to occur.

8. DO enjoy their presence and the fact that occasional sightings of this wily predator adds to the mystique of your neighborhood, even an urban one. Try to minimize your conflicts with these creatures by following these simple precautions.

Above left: Canids are often portrayed as bloodthirsty beasts by the media. Learning about their actual ecology will help people better coexist with them. For example, this coyote is howling, not exposing its teeth to be threatening.

Above right: In reality, the coywolf is a marvelous animal who can best be appreciated when we do not ignorantly attach a negative label to it.

Learning and teaching about its actual ecology and behavior will illustrate the real image of the eastern coyote, which is one that is a valuable part of the wild and not a threat to man.

Chapter 7: Summary of Eastern Coyote Ecology and Behavior

Ecologically, the coywolf behaves as one might predict for a 32-to-40-pound wild canid. Although there is variability between study sites, on average, it has a larger home range than most western coyotes but considerably smaller than wolves, at about ten square miles. Thus, they usually live at lower densities than western coyotes but at much higher numbers than wolves in a given area with territory sizes closer in dimension to western coyotes than wolves.

Eastern coyotes travel long distances daily (10–15 miles), eat a variety of food including deer, but focus on medium-sized prey such as rabbits and voles. It is very social when not hunted by people, most often living in small families of 3 to 5 individuals. In short, they have ecological and physical characteristics that can be seen on a continuum of coyote-like to wolf-like, which is probably not surprising, given all that we know about their hybrid origin. They are effective predators of deer, but have greater dietary flexibility and lower kill rates on moose than wolves, which implies they have not replaced the ecological role of wolves in the Northeast. Overall, they are more like coyotes than wolves.

There is a misconception that coyotes are not social animals out west. It should be noted, however, that research by Bill Andelt in Texas, Eric Gese and Bob Crabtree in Yellowstone, and Franz Camenzind at the National Elk Refuge, Wyoming, among others, have also found western coyotes to live in packs where there is abundant prey and no human persecution. The belief of the coyote as a loner is probably because they are often trapped, shot, and poisoned in much of the human dominated ranchland areas. It would be hard for any animal to be social under those circumstances. Even though wolves often kill coyotes, observations in Yellowstone National Park by Bob Crabtree and Jennie Sheldon have even documented coyote groups chasing gray wolves off wolf-kills (mainly elk) when they have a numerical advantage such as 3 on 2 or 2 versus 1. The message here is that most populations of coyotes and wolves, and their hybrids, will be social if not persecuted.

These images clearly show the hybrid red/eastern wolf × western coyote background of the coywolf, including red behind the ears (*see next page*).

Eastern coyotes live in a multitude of habitats ranging from wilderness to urban throughout the Northeast, but seem most at home in mixed habitats of fields and woods where different vegetative communities meet. This is where the most food exists for their staple prey, mainly medium-sized mammals and deer. There is normally a higher density (animals per square mile) of both canines and their usual prey living in agricultural and suburban areas of southern New England than in places like the deep woods of Maine, which most people generally envision as having the most wildlife.

The coywolf, which colonized the Northeast in the 20th century, has a mixture of DNA from native eastern wolves and naturally colonizing western coyotes, as well as lower levels of gray wolf and dog genes. Because their colonization of the area was non-human assisted, the species should be regarded as a native and naturally evolving member of the faunal community even though degradation of original habitat (i.e., conversion of forests into agricultural lands) and wolf eradication programs no doubt contributed to their success and evolution.

With changing land use patterns, hybridization, which is a natural event in nature, should not be viewed as a negative influence. Rather, it may be enhancing the adaptive potential of both western coyotes and eastern wolves, allowing this evolving canid to more effectively exploit the available resources in rapidly changing environments. Furthermore, eastern wolf genes may now be able to persist in regions from which they were extirpated, like in New England. Thus, the coywolf is moving towards a *Canis* that is better adapted to anthropogenically modified landscapes, while retaining some DNA from the original wolf from this region.

We learned a lot about eastern coyote genetics and ecology in *Part 1*, gaining an understanding that it is unmistakably a product of hybridization between closely related canids, and that it could probably classify as admixed (hybridized) when looking at a spectrum ranging from ‘pure’ western coyote to gray wolf. However, it is clearly most closely related to western coyotes in terms of ecology and adaptability to living with people. Now, let’s take a look at the management of these creatures and how that affects not just them, but their larger cousins, wolves.

Eastern coyotes normally prey on small to medium size mammals such as this rat.

Top: A four month old pup has most of the characteristics of an adult.
Bottom right: All *Canis* establish dominance within the pack.

Part 2: Management and Politics

"If you see something that is not right, not fair, not just, you have a moral obligation to do something about it."

- U.S. Representative and civil rights activist John Lewis

Chapter 8: 'Coyote' Management and Implications for Wolf Recovery in the Northeastern U.S.

In addition to the eastern coyote that is the focus of this book, there have also been a number of wolves that have made it to the northeastern United States in the past 10 to 20 years. These animals were 70-90 pound typical full-bodied, wolf-sized animals, and were assumed to be either eastern, gray, or a hybrid of the two, with limited coyote genes. Using information from Chapter 3, that would mean those animals would likely be over 80% wolf in DNA analyses and hence would be classified unambiguously as wolves. Current wolf range in southern Canada is within 100 miles of the United States, a distance that wolves could travel in a week or two. Unfortunately, all of these wolves were found dead before anyone could monitor them. That is, until recently.

Wolf Recovery Attempts in the Northeast

In 1992, the U.S. Fish and Wildlife Service (USFWS) developed a recovery plan for wolves in the Northeast which included options for natural recovery or an active reintroduction into the woodlands of both New York and Maine, the two states with the most suitable habitat for the species. A reintroduction would have involved capturing wolves, probably from southern Canada or the Great Lakes states, then releasing them in select areas of the Northeast. Legal challenges brought about by environmental groups from 2003-2005, after over a decade of inaction by the feds, succeeded in favor of not abandoning recovery efforts.

We have a legal obligation to restore an extirpated species listed under the Endangered Species Act (ESA) to its native range. Many, including myself, now believe that the only way that wolves will return to the United States, either by natural recolonization or active reintroduction, is if they and their close kin are better protected. This has happened in and around Algonquin Provincial Park where not just the rare eastern wolf is protected, but so too are coyotes and their hybrids. It has resulted in the natural social structure returning to eastern wolf packs.

Interestingly, one of the biggest questions remaining for biologists to answer, is which wolf should be allowed to return to the region? And it's not as if that decision can even be conclusively determined by scientists. We originally thought the larger gray wolf (called timber wolf in this region) inhabited the Northeast, but research over the past two decades by Paul Wilson and Brad White's team at Trent University indicates that it was the eastern wolf that used to live there, with a strong likelihood that gray-eastern wolf hybrids, similar to the 'Great Lakes wolves' of Minnesota, Wisconsin, and Michigan, also resided in much of the Northeast.

It could be argued that gray wolves, or their hybrids, may be a more appropriate source for an active wolf restoration, as they would probably not mate with eastern coyotes due to size differences and the fact that they are more distantly related to both coyotes and eastern wolves. You see, eastern wolves and coyotes evolved in North America, whereas gray wolves in the Old World. The gray wolf may be more of an ecologically effective predator of moose, which in recent years have been increasing in range in the Northeast. However, it may be difficult to find a source of suitable gray wolves in the East as the neighboring wolves in central Ontario and eastern Quebec are eastern wolves or eastern-gray wolf hybrids.

Given all of these influences, the final chapter of canid recovery in the Northeast has yet to be written. In fact, the USFWS and the Northeastern states have chosen to do nothing, which is illegal given the mandates to recover wolves in the area. My opinion, given all of the evidence, is that the Great Lakes wolf type would be the ideal wolf for this region. It is bigger and certainly more wolf-like than eastern coyotes and has a low likelihood of hybridizing with them. It is also found within dispersing distance of the Northeast and would likely survive well there, similar to the ~4,000 currently residing in wild in the U.S. Great Lakes states.

Legal Protection for Wild Canids in the Northeast is Necessary

Many northeastern states allow unlimited killing of coywolves, yet it does not greatly affect their overall population size, as amply demonstrated in Gerry Parker's book, *Eastern Coyote*. While all canids are impacted by exploitation in some way (socially, ecologically, potential for inbreeding, etc.), western and eastern coyotes are seemingly able to fill the void of missing individuals more readily. Wolves are generally more severely impacted by human persecution though they are currently doing well, even with hunting seasons, in the Rocky Mountain states.

Many experts believe the only way wolves will return to the Northeast is if their closely related kin, coywolves, are also better protected.

It seems grossly inappropriate that although eastern coyotes are so close in appearance to eastern wolves, as well as sharing some of their genetic makeup, they are afforded virtually no protections, while wolves are still listed under the ESA in the Northeast and are currently returning to the area on their own. Recall the drawing from Chapter 3 that showed there are overlaps in size among similar-looking *Canis*. Genetic testing often has to be conducted just to verify a canid type. Maine, Vermont, and New Hampshire are the nearest states to established wolf range, and all regrettably allow 'coyotes' to be shot year-round. The USFWS seems to mostly ignores evidence that wolves are returning to the area or just gives hunters a slap on the wrist if they kill one because they "thought it was a coyote". That is, if they even report it. The Maine Wolf Coalition has documented numerous wolf-like canids found in the Northeast in the past couple of decades. It seems reasonable that many are not reported especially since the state of Maine and USFWS quite clearly have no desire to uphold the law and facilitate wolf recovery. Nothing has been done since the lawsuits instructed the government to recover wolves a decade and a half ago. Maine barely even acknowledges the hybrid origin of their established canid population.

A 2009 formal petition by John Glowa and colleagues, including myself, to the USFWS requested that all large canids (coyotes, coywolves, and wolves) be better protected so that wolves (either eastern, gray, or most likely, their hybrids) can return to the region. Since they are listed under the ESA, the northeastern states are really violating the law by permitting such lax "management" regulations of existing hybrid canids. Recall the finding from Chapter 3 that even larger gray wolves out west are killed by people thinking they were coyotes. In the Northeast, sometimes genetic testing is required to identify a canid so it is no wonder that it would be difficult to identify them correctly in the field, often under low light conditions with no scale to judge a canid's size.

In 2010, the USFWS issued its "Notice of 90-day petition finding", over a year late, denying our request on the basis that it 'does not present substantial scientific or commercial information indicating that listing the wolf in the Northeast may be warranted'. In the denial, the USFWS acknowledged that in July 2000 they also had proposed a gray wolf Distinct Population Segment for the Northeast. This proposal was not part of the final rule when issued in 2003, which was subsequently successfully fought in court.

It is pretty obvious that better regulatory strategies for the protection of all canids existing in the northeastern U.S., such as those indicated in the referenced petition, may result in the natural restoration of a more wolf-like canid in the Northeast. It remains to be seen how the federal and state governments will respond to comply with the law. Sadly, citizens are now forced to look for evidence of wolves in the Northeast on their own, as the states take a hands-off approach to anything wolf-related, despite wolves being an endangered species that is an important public trust resource for all citizens.

All states in the Northeast allow liberal killing of eastern coyotes, such as trapping and shooting them (including pups, *top left*) and during long hunting seasons such as this ‘coyote’ which was shot and left to rot by the hunter (*top right*). Eastern coyotes are social, sentient animals (*bottom right*). It is time that this intelligent species receives better protection for ethical reasons and for its own intrinsic value, let alone the legal reasons of wolves being killed while people claim they *just* killed a ‘coyote’.

Live Wolf Documented in Maine not Protected by the State

Taking matters into our own hands when nobody else will is what John Glowa, the president of the aforementioned Maine Wolf Coalition, and I specialize in. Over the past couple of years, we (and some close colleagues) have "quietly" collected scat from the Maine North Woods on our own dime, convinced that wild wolves live there and the state is either ignoring them or quietly trying to eliminate them before they are "officially" documented. In October 2020, one scat from the lab we are working with determined that it was 85% eastern wolf! This was exciting news, clear indications that at least one wild wolf lives in Maine. The first thing that the state of Maine wanted to know was where it came from. Appropriately, John told them he would not tell them unless they protected a large area from coyote/canid hunting given their obvious similarities and Maine's refusal to do anything to help wolves in the past. Even with official petitions from Glowa, of which the public supported, they refused to offer any form of protection. From the outside, and acquiring this information second hand from John, it seemed obvious to me that the state of Maine was pissed that we had this knowledge and they couldn't do anything about it. We subsequently received a small amount of funding and currently have another 30 samples being tested. We are confident that there is more than one wolf running through the forests of this state. In fact, some of the scats that we have collected are as large as scats from wolves in Yellowstone National Park and are bigger than the eastern wolf scat we have already documented!

However, with the current year-long seasons on coywolves in most northern U.S. states, wolves have virtually no effective legal protection if and when they reproduce and establish populations. It is important to remember that this is lack of action is purposeful by the state of Maine as they have no intention to protect wolves, unless legally forced to. In addition to human-caused mortality, hybridization is a potential problem between eastern coyotes and returning wolves. While natural selection may favor a more wolf-like canid if all canids are safeguarded, any of the eastern or eastern-gray wolves that colonize the northeastern U.S. are currently in danger of hybridization with eastern coyotes and state policies in the Northeast not protecting all canids.

Yet research by Dan Harrison indicates that good habitat exists for wolves throughout the Northeast U.S., especially in Maine. Therefore, appropriate wildlife management policies should not only allow, but promote the continued adaptation of eastern canids to their changing environment as an efficient means towards establishing a *Canis* population that is able to effectively exploit the available habitat and prey-base. Further, based on my earlier discussion of population control being

All pictures are putative eastern coyotes/coywolves in Maine but they can be very difficult to distinguish from larger wolves without genetic analysis.

These are known wolves that were killed in Maine in the 1990s. The state of Maine continues to deny and ignore the presence of wolves and effective offers no protection by allowing a year-round hunting season on the coywolf, a closely related creature. Photos © John Glowa, Maine Wolf Coalition.

most effective if done by the canids themselves, rather than people killing them, it stands to reason that if hunting coywolves is curtailed, their populations will then stabilize.

As I've made abundantly clear in this book, issues arise from the difficulty of clearly distinguishing eastern wolves from coyotes, especially the eastern coyote, based on their tendency to hybridize, especially where the two live near each other as in the region south of Algonquin Park, Ontario. It may be prudent for management policies to allow the coywolf to evolve in response to natural selection without extensive human manipulation (hunting, trapping, etc.), especially given the potentially adaptive hybrid genome inhabiting these regions, as observed through the recent emergence of large wolf-like specimens in New England. This has worked very well where a buffer area around Algonquin Provincial Park, Ontario has helped to restore a more wolf-like canid to the park.

Ethical and Financial Reasons for Canid Protection

As a biologist who has studied the eastern coyote, I see an incredibly adaptable and family-oriented animal that is personable, social, sentient, and an important member of the ecological community. There is a moral and ethical problem with the fact that 42 out of 49 states essentially treat eastern and western coyotes combined as vermin and allow year-round hunting of them. This is so even in locations where they literally have no or minimal contact with livestock and their activities of hunting rodents and attracting wildlife watchers are more beneficial than detrimental. Since only a minority of people now hunt, and wildlife watching is currently a considerably bigger component of our economy, it makes no sense given the importance of predators in maintaining a healthy landscape.

Wildlife watching includes bird feeding, nature tourism, and hugely popular wildlife photography. The advent of digital cameras, including trail-cams, has revolutionized this hobby and profession. These activities generate staggeringly more money than hunting for some states (over 10 to 1 in my home state of Massachusetts; $755 million vs. $71 million in 2006), yet there are virtually no designated public wildlife watching areas in the entire Northeast other than Acadia National Park, the majority of Baxter State Park in Maine, and the adjacent Katahdin Woods and Water National Monument.

Considerable money is spent on wildlife watching but there are few hunting-free areas in the Northeast that function at the ecosystem level like many western national parks. In my books, *My Yellowstone Experience* and *Northeastern National Parks*, I argue for creating additional non-hunting wildlife refuges here in the Northeast.

Most people would think that the White Mountains of New Hampshire is a protected area, but they make it clear that hunting is allowed throughout the National Forest following state rules that allows year-round 'coyote' hunting and liberal black bear hunting that has killed "record" numbers of bears (850-1,000+) in recent years, mostly through baiting them to an area then shooting them. There is precious little space set aside for our wildlife friends throughout this large area to live unmolested from human interference. By wildlife watching areas, I mean ecosystem-size areas that can support multiple members of the largest species or those species requiring the largest territories. For the coywolf, this would require a minimum of 100 square miles to support multiple packs.

This doesn't count existing privately-owned sanctuaries like MassAudubon's many properties dotting the landscape in Massachusetts. These areas are important for nature but most are relatively small in area and would not protect even a single pack of coyotes that travel on and off those properties based on their habitat needs. And surprisingly, even Massachusetts' largest national park, Cape Cod National Seashore, actually allows hunting despite the fact that most national parks nationwide ban this activity (see Chapter 13). To many people, this violates the mandates of such parks to preserve our natural and wildlife resources unimpaired for future generations.

There should be more places where researchers and wildlife fanatics (including many hunters who also like to watch wildlife) can study unthreatened animals like deer, coywolf, fox, bear, and moose, without having their photographic or study subjects at risk of being shot. In addition, there should also be multiple places in the Northeast, similar to the many national parks out west, where wildlife is not under constant management (i.e., killing) pressures from humans. Supporting a wildlife watching area concept does not necessarily make one an anti-hunter; rather, it makes one a pro-wildlife watcher. After all, an animal can be killed only once, while it can potentially be watched or photographed unlimited times!

As Bridget Borg and her colleagues noted, lethal control of large carnivores, including coyotes, in addition to being politically unpopular with the voting public, can also affect the chances of people observing those predators. Observing carnivores is a major economic driver in many regions with people specifically visiting regions where they are protected to have "peak life experiences".

Yet hunting predators, even in border areas outside of core protected areas like national parks, can reduce the sightability of those animals. Many of the places outside parks are managed for multiple uses, including the hunting of the same individual carnivores that generate millions of dollars for local economies. This has led to the recommendation of using compassionate conservation when managing wolves, especially in areas where tourism is an important economic engine for a region, even where canid populations are stable and in little danger of long-term decline. Thus, one should keep in mind that the vast majority of the public are typically against any potential lethal control. Hunting carnivores directly affects a growing number of people who simply enjoy viewing the same animals and knowing that they are out there.

That was the impetus behind me publishing *Northeastern U.S. National Parks: What is and What Could Be* in early 2020. The 250-page, 500 picture e-book makes the case to expand the National Park (NP) System in the Northeast, beyond just having Acadia NP as its only large "natural" park, by adding 3 units: Cape Cod NP, Kancamagus NP in NH, and Maine Woods NP and Preserve. These 3 units are already existing federal land and could immediately be turned into true national parks by an Act of Congress. Giving national park status to these areas would provide an important, higher level of protection to better safeguard these areas, especially during politically volatile times. Relating to the environment, I strongly believe that NPs are "America's Best Idea", as Ken Burns eloquently noted in his 6-part documentary, and creating these parks in the urbanized Northeast is important.

The traditional bureaucratic wildlife management standpoint is that if a species is breeding and compensating for its losses, then so what if we kill many of them? This is called maximum sustained yield. But just because coyotes and coywolves can reproduce quickly does not mean they do not have feelings when losing a mate, a pup, or another pack member. Family dogs suffer from such loss, why wouldn't other canid species?

What if a pair of wild canids are together for four or five years and then one is shot? There is little doubt that these social, intelligent animals do feel loss. After living a life in the wild, struggling together to survive, who wouldn't agree that strong bonds must be forged between pack members?

Accordingly, why shouldn't all states have a strict bag limit on hunted wild canines, even common ones? This allowed 'take' is in line with the management policies for most other wildlife species? Treating them otherwise sends the wrong message about the value of these animals, both ecologically and aesthetically.

To add further ammunition to this argument is the issue of the wolf returning to the Northeast. While state agencies have effectively (and illegally) chosen to do nothing to protect 'pure' wolves (ones with ≥80% wolf genes) from returning to the Northeast as they continue to die at the hands of hunters, we have had the amazing opportunity to witness the literal evolution of a new creature, the eastern coyote/coywolf, in the past 50+ years. It will be fascinating nonetheless, to see how this amazing animal continues to evolve to meet the challenges of the different inhabitants and environs of the Northeast.

It could be argued that gray (or gray × eastern wolf hybrids aka 'Great Lakes wolves') wolves would be the most appropriate type of wolf to be restored to the Northeast, since hybridization with coywolves would be less probable than if the smaller eastern wolf was restored.

Great Lakes wolves would also be more efficient predators of the region's largest ungulate, moose. Plenty of wolf habitat remains in the Northeast, with northern New England's 'North Woods' as the most prime habitat. The region has abundant prey including moose. Having wolves there too would add to the mystique of the area.

Chapter 9: Carnivore Conservation Act

"It is difficult to get a man to understand something when his salary depends upon him not understanding it."
– Upton Sinclair

The disparity between game management and ecologically-focused conservation is nowhere more evident than when it comes to native carnivores. The way that wild canids (foxes, coyotes, coywolves, wolves) are treated nationwide is appalling. Unless they are (or were) listed under the Endangered Species Act like wolves, most states allow very liberal hunting seasons on these social, family-oriented animals. Even the states of Wyoming, Montana, and Idaho, where wolves were Congressionally delisted (elected officials politically skirted around the Endangered Species Act), allow very long hunting seasons. In some areas of Idaho, it is legal to kill wolves nearly year-round, and in Wyoming that is the case in ~85% of the state. Conservation would prioritize restoring them as widely as possible across the landscape, but hunting-driven management seeks to do just the opposite.

Government Agencies Biased to Kill Carnivores

While most wild animals are offered some form of sanctuary from hunting, many states give eastern and western coyotes no reprieve. And they are not hunted for meat, so unless their fur (despite many forms of 'faux fur' now available) is used or the animal is legitimately causing some sort of conflict, they are simply 'recreational' targets for hunters. How barbaric is that? Most state agencies, focusing fully on population numbers, disregard the gruesome ways they are killed like being shot or clubbed to death in traps, chased to exhaustion by dogs, run over by snowmobiles, killed by poison, or shot over bait at night. Wildlife officials often state that those methods won't affect overall population numbers. While technically true, at least over a large region, they ignore the very questionable and inhumane activities people are doing, just because coyotes are common.

For instance, in Massachusetts which officials claim is the shortest of any hunting season in the country, they allow hunters to kill large numbers of coyotes over bait piles with one man bragging that he kills the alphas first so additional transients come to his bait. He proudly boasts to having killed 400 in just 1 decade. The state also allows people to kill eastern coyotes from their houses. In the course of my research I lost research subjectss to people shooting them from houses and found out, to my amazement, that the practice was legal. This drew widespread anger yet the practice remains legal today. Similarly, *Protect Our Wildlife Vermont* documents how that state encourages people to kill bears through long seasons, the use of dogs, and baiting, as they kill record amount of bears in that state (750 in 2019).

This is the crux of the remainder of the book. State agencies say that 'coyote' and other predator populations (most notably, black bears) are doing fine, and aren't in danger of extinction. Others, including myself, claim that there is much more than that. People love to watch carnivores, as indicated in the previous chapter, and hunting them affects the ability for others to see them. Also, it still remains unknown how hunting them affects their ecology but common sense would dictate that smaller groups of a predator would have a different, and arguably weaker, ecological effect compared to undisturbed populations. Lastly, there are the ethical concerns of killing a sentient, social, family-oriented animal when it really isn't needed the vast majority of the time.

Many who are untrained about canid ecology may have concerns and reservations by the thought that curtailing hunting of these prolific wild canines might result in them overrunning suburban neighborhoods where they aren't wanted. But research has shown that their prolificacy is partly a mechanism that kicks in through loss of pack members whereby they have bigger litters or increased offspring survival. It wouldn't take very long for them to scale back reproduction if persecution ceased and they were left to regulate their own numbers. Mortality rates for wild canids in suburban areas are already high due to many causes such as roadway mortality and diseases. And we know that transients are constantly seeking territorial openings to claim as their own.

This magnificent 34-pound radio-collared female coywolf was shot in the neck and left in the woods to rot by the hunter, a practice that is currently legal in every Northeastern state for a majority or all of the year. Hunters don’t even have to purchase a special tag to kill (or wound) as many as they want. In 2020, Massachusetts established a wanton waste clause, meaning that you have to use what you kill, like its fur. It took tremendous public pressure just to get the state to do that.

While coyotes are certainly prolific, those claims are often exaggerated. Most state agencies say that up to 70% of a coyote population can be killed before populations are reduced in the long-term. MassWildlife even discussed this in 2019 when explaining how hunting contests won't affect populations. However, this claim is based on a non-peer reviewed study that is exceedingly difficult to locate.

In 2017, Public Employees for Environmental Responsibility (PEER) challenged the federal government from using this paper to justify killing coyotes. I was part of that letter along with four pages of professionals who signed it, including the world famous Jane Goodall. We stated that the U.S. Department of Agriculture has consistently used this study for over 40 years, despite its established flaws and disputed findings, to justify large-scale coyote control efforts. Even the study's own authors stated that eradication efforts were not an effective means of preventing depredation, as they felt that their paper was being used to justify killing coyotes. When talking with Adam Carlesco at PEER, they told him they believed it was pointless in the long-run due to coyote's fecundity. In addition to being used to justify large-scale coyote control, this obscure (found in a small agricultural bulletin) and non-peer reviewed study has been cited and utilized in a variety of documents over the years to justify a variety of agencies' actions related to coyote management. It has even been used in the Northeast where the eastern coyote is very different, having been found to have a delayed maturity whereby they don't become mature until their second year, similar to wolves. The 23 page Data Quality Analysis (DQA) complaint argued that 'coyote control was being based on a scientific house of cards', and listed numerous reasons why the government should focus on the ecological importance of coyotes, not on how many can be killed.

A Rigged System

It took nearly a year for the government to respond to Carlesco at PEER, even though it was supposed to be 60 days. In their response, they stated that they felt the study was fine to use, as coyote populations aren't jeopardized by killing them. Adam sent a detailed letter back to them explaining that they were missing the entire point of our complaint, that they were ignoring the predator's ecological importance, aesthetic value, and put no ethical rationale into focusing on killing a predator that would just rebound from the persecution. The procedural designation of a DQA prevented legal action; so, unfortunately, there wasn't much we could do except to make our point and use it in future litigation efforts against the government. As I found out later within the state of Massachusetts (see Chapter 11), environmental agencies are often the arbiter of their own policy. I was beginning to see what my friend Brooks Fahy, Executive Director of Predator Defense, a national group trying to reform carnivore management, has repeatedly told me: "Wildlife management is a rigged system and unfair in so many regards".

Top Left: The eyes of a wild canid are penetrating, almost like they are seeing through you.

Right: How long will eastern coyotes and other canids have to look over their shoulders in fear of a hunter's bullet?

Fortunately, there are many groups challenging the government's policy of killing coyotes and other wildlife. Most organizations have focused on targeting the most-opaque of these institutions, a little-known government program called Wildlife Services that kills well over a million animals a year, at the tax-payers' expense. Brooks has been fighting this agency for most of his career, culminating most recently in Idaho where a poison called a "cyanide bomb" was placed next to a house by a government agent because a local rancher complained about coyote predation. The device exploded when prodded and it killed a family dog and nearly a boy. Many western states, through lawsuits, are now restricted from freely using Wildlife Services to kill animals. It is curious when multiple conservative presidents over the years, supposedly bent on reducing waste, keep a branch of government active to benefit a select few. Fortunately, Congressman Peter DeFazio of Oregon, a long-time critic of Wildlife Services, who has described the agency as more secretive than the Department of Homeland Security, has attempted to defund and reform this agency for years, as have other legislators. Their bills have been repeatedly blocked by Republican lawmakers.

Given existing laws, very few states seem to recognize the important role that these predators play in a myriad of food chains/webs. It is pretty clear to most biologists that canids contribute directly to the evolution of their prey. Even Native Americans have only been in North America for about 10,000 years, yet canids and their prey are millions of years old. Obviously, predator and prey have evolved together over millennia and prey has not gone extinct. Instead, most modern species extinctions can be traced directly to human tampering.

Take this example as a reason why wildlife agencies have a conflict of interest when managing predators, specifically wolves. In 2008, a federal judge reversed the Bush Administration's decision to take the wolf in the northern Rockies off the Endangered Species List because the states of Wyoming (especially), Idaho, and Montana, wanted to immediately cull the population of these magnificent predators by more than half. Sadly, in the first two months of their being removed from the protection of the Endangered Species Act (ESA), over 100 wolves were swiftly killed. That is unbelievable when you consider the years and taxpayer dollars spent on the wolf recovery effort only to have the beneficial results weakened in just 60 days. There was no regard to the implications of the wolf's ecological importance. When a lawsuit put the wolves back on the ESA, the Obama administration subsequently delisted wolves in Montana and Idaho by administrative procedure, even preventing judicial review. This really irked many environmentalists who helped him get elected, not to mention how undemocratic the move was. Because of that, hundreds of wolves are now killed annually in Idaho and Montana, with many additional canids shot in Wyoming, a state with a smaller population. Idaho has even had the audacity to institute a nearly year-round hunting season in most of the state and even kills wolf pups to 'manage' their population, completely disregarding their ecological, cultural, and aesthetic importance.

Coyotes are rarely a danger to people, yet they are killed in staggering numbers with about a half million killed in the U.S. every year, which Dan Flores describes in detail in his 2016 book *Coyote America*. This is the case despite there being very simple ways to coexist with these animals – see Chapter 6 on *Living With Canids*. In the grand scheme of things these animals – even the ones living in urban areas – provide such a minor risk compared to others in our everyday activities like driving. Protecting pets and livestock has been found to be far more effective than killing them.

Better Protections

In 2012-2013, I became friends with a carnivore advocate online. It was through a western U.S. conservation website so imagine my surprise when I found out that Louise Kane lived on Cape Cod, just outside the boundaries of Cape Cod National Seashore. This was a time when I had lost my research permits (see Chapters 10-13) in Barnstable and was working as a seasonal ranger at the National Seashore. Those were depressing times for me when I was working well below my potential and without doing any research.

Louise, a non-practicing attorney, and I met numerous times, became friends, and decided something had to be done about carnivore management. Many people talked about reform but nothing had been written about what that might look like. So, in the next year and a half, we co-wrote multiple drafts of what would become North America's first Carnivore Conservation (CC) Act. Along the way, we learned that Americans are way behind European countries in carnivore conservation, despite the vaunted "North American Model of Wildlife Conservation" (NAM) being touted as the world's most effective wildlife management system. The European Union established carnivore protections in Europe in the 1990s with remarkable success, even in an area that has many more people living at a higher density. Along the way we learned that the NAM is both an incomplete framing of history which downplays the contributions of non-hunters, and it is an inadequate set of guidelines for preserving species and ecosystems in the face of the current mass extinction crisis.

While some people think the only good coyote is one that is trapped (*top left*), shot, and skinned (*top right*), an increasing number of people decry these practices and realize that they should be protected and regarded as an important wildlife species (*bottom right*).

In June 2014, after about 20 different wildlife biologists and experts in the field gave us their peer-reviews, we published a revised version of the *Carnivore Conservation Act of Massachusetts*. Our aim was to write a document for lawmakers, including personnel at wildlife agencies, that could be used to revise current management practices. The document exposes the long hunting seasons and questionable legal methods allowed and recommends shorter seasons and using methods that are public accepted. The list of reform strategies is so long it can actually be confusing, even to experienced legal scholars, to process.

We noted that carnivores are an intrinsic component of healthy ecosystems. Many species of land-based carnivores inhabit the Northeast including members of the Mustelidae (weasel), Canidae (dog), Felidae (cat), Mephitidae (skunk), Procyonidae (raccoon), and Ursidae (bear) families. This petition provided a framework to give some of the more maligned carnivores additional protections, and to have management practices (i.e., hunting seasons) better adhere to NAM's principle that wildlife should only be killed for a legitimate purpose.

Mark Elbroch, famed mountain lion researcher, has critiqued the NAM for doubling down on hunting and maintaining the status quo (pp. 185-6). The author exposed mountain lion hunting (and carnivore hunting in general) as violating most of core tenets of NAM, such as killing without a valid reason, not having fair chase, not allowing effective democratic input, and allowing the sale of wildlife parts (like fur), and concluded that to embrace NAM was to go backwards from being inclusive (p. 194). Its unchallenged acceptance within wildlife management circles has helped fuel the inaccurate narrative that hunting is indispensable to conservation. Rather, wildlife commissions need representation from non-consumptive users (p. 210) and proposals, such as the Teaming with Wildlife legislation, should be reintroduced to Congress.

The CC Act builds upon the protections included within the *Wildlife Protection Act of 1996* that eliminated body-gripping traps for furbearing species and hounding and baiting for bears and bobcats in Massachusetts. However, the 1996 act neglected key protections for some of Massachusetts most charismatic carnivores including eastern coyotes/coywolves, red and grey foxes, and others, some of which may establish future populations in MA and the Northeast, such as wolves and cougars/mountain lions.

The tenets of the CC Act would protect these ecologically important animals from inhumane, outdated practices that persist to this day throughout the country. Important research indicates that many wildlife laws are not supported by the general public, as they do not reflect the attitudes of a majority of residents who believe that carnivores deserve better protections from excessive, cruel and unnecessary hunting practices. The CC Act was written to recognize that healthy carnivore populations are the cornerstone of a balanced ecosystem. In Massachusetts, residents indicated their support to protect wildlife from cruelty by passing the *Wildlife Protection Act of 1996* referendum by a 2 to 1 margin. The CC Act aims to gather similar support to protect carnivores and provides the basis for a new paradigm in managing wild carnivores that is based in acceptance, tolerance, and coexistence. We believe that wildlife are public trust resources that belong to all the residents and that management of carnivores must be based on sound science instead of politics driven by fear, hate, intolerance, bias, or maximum hunting opportunities.

Provisions of the Carnivore Conservation Act

The most important points of the CC Act of Massachusetts are listed below. I share them here so readers can use this book as a single source for many important facets of eastern coyote ecology and wildlife management practices:

1) **Promote the welfare of carnivores by prohibiting cruel and inhumane hunting practices.** *This includes:* Prohibiting penning of wildlife for purposes of training dogs or as spectator sport; Prohibiting hounding (i.e., using dogs to chase) carnivores, and; Extending the provisions of the MA anti-cruelty laws to wild carnivores.
2) **Promote a fair-chase hunting ethic of carnivores.** *This includes:* Prohibiting baiting for purpose of killing carnivores; Prohibiting shooting carnivores from inside a home or building; Prohibiting night hunting, and; Prohibiting the use of electronic calls.
3) **Require scientifically valid carnivore management practices that serve a legitimate management purpose/objective/goal.** *This includes:* Prohibiting wildlife killing contests or predator derbies; Creating a quota for carnivores, even common ones; Requiring the purchase of a carnivore hunting tag and creation of a minimum fee for hunting carnivores; Creating a 'Carnivore Conservation Stamp' for non-hunters and wildlife watchers to purchase; Reduce season hunting lengths; Establishing "harvest thresholds" for each wildlife management zone; Establishing no hunting refuges on state and federal park and forest lands; Mandating training for wildlife specialists that "remove" carnivores for management purposes; Requiring good animal husbandry practices to prevent carnivore livestock conflicts, and; Creating a wanton waste provision for carnivores similar to other game species.

4) **Require the use of current and best available science in wildlife management decisions of carnivores. This involves abandoning principles that support the maximum utilization or killing of carnivores and requires accounting for the ecological importance of carnivores in fully functioning and robust ecosystems and recognizing their innate social and family structures.** *This includes:* Obtaining scientific research permits without political interference; Recognizing and identifying eastern coyotes also as "coywolves" (*Canis latrans* x *C. lycaon*) in order to recognize their mixed species (western coyote × eastern wolf) background, and; Creating a carnivore conservation biologist position to focus on non-lethal management objectives for carnivores and to study and promote tolerance of carnivores.

Proposed Regulatory Changes

While the section above is detailed to the particulars of carnivore management, it may be hard for the average person to discern what management may actually look like on the ground. Here, this passage is based on a summary paper that Louise and I wrote in 2019 which obtained 5 pages worth of testimonials of support from many different organizations supporting changes to carnivore management that involves shorter seasons, instituting bag limits, and eliminating unpopular methods to aid in killing carnivores. Short of a *Carnivore Protection Act*, which might eliminate carnivore hunting altogether, these recommendations provide the level of protections that research indicates would be highly favorable by the majority of citizens, possibly by a 3 or 4 to 1 ratio. Those proposed regulatory changes are listed in the next two paragraphs below:

Whereas foxes can be hunted November – February, eastern coyotes/coywolves from October – March and bobcats from December – March, this Act will reduce hunting seasons on all wild canids and felids in Massachusetts to 1 month, from December 15 to January 14, excluding Sundays. The Act will prohibit all wildlife killing contests whereby hunters compete for prizes or entertainment to kill the most or biggest of a species. The Act will also prevent ecologically indefensible and unfair chase practices by prohibiting hunting over bait, night-time hunting, electronic calls, using dogs to chase carnivores for hunting purposes, and will establish a 1 bag limit per hunter per animal. The purchase of a $25 (which can be raised but not lowered) Carnivore Conservation Stamp will be required to hunt one of each

species of carnivore. The fees will be allocated specifically to fund research and education efforts on the protected species. Additionally, the Act will establish refuges from hunting for carnivores on state and federal parks, forests, and seashores to allow for research, and to protect species from hunting related stress and mortality.

Whereas black bears can currently be hunted statewide in 3 seasons from September – December, this Act will reduce the hunting season to one week (Monday to Saturday) per year at the discretion of MassWildlife, will maintain a bag limit of one animal per hunter with purchase of the Carnivore Conservation Stamp, will continue to prohibit baiting and the use of dogs to hunt them, and will re-establish the rule of only allowing hunting in Wildlife Management Zones (WMZ) 1-8 (western half of the state) to protect bears colonizing new areas of eastern Massachusetts. Bobcat hunting will also remain legal only in WMZ 1-8, as currently implemented.

Fortunately, there are some positive developments which will help eastern coyotes. The relatively new upper management staff at MassWildlife values predators and realizes that most of the public doesn't hunt. While they continue to spin the same maximum sustained yield comments about not needing to protect them because we don't kill enough to affect their populations, they are beginning to listen to public complaints about overkilling an ecologically important animal. On June 18, 2019, I testified in front of MassWildlife about banning contest hunting. Yes, it was 2019 and citizens had to actually pressure state wildlife officials to ban contest hunting for coyotes and other carnivores. From 7:00-9:00pm, all but 3 of the 40+ presenters who testified spoke about the inhumaneness of these contests.

What was lost in those meetings was the fact that it took 4 public hearings (arranged by state Senator Julian Cyr; I attended the next to last one) to discuss making contest hunting illegal, 2 rule-making sessions to re-debate the same thing, then a seventh gathering to actually vote on the measure. This compares to the relatively lax way that MassWildlife has increased hunting seasons on just about every species in the last 10-20 years. There will be a meeting and despite what the public says, the extension will go into effect to allow additional hunting of wild turkeys, white-tailed deer (multiple increases in the past 20 years so now they can be hunted from October 1-December 31), and black bears, among a host of other animals including bobcats and coyotes. Most species can now be hunted the longest since colonial days, all while hunter numbers continue to decrease nationwide.

I am convinced that there will be a better day for canids where their will to exist will supersede a person’s right to kill them for recreational purposes.

For example, MassWildlife extended the black bear hunting season in 2015 for most of the fall and now throughout the state, even in places where they currently don't live. It is currently legal to kill a bear within Cape Cod National Seashore even though there is not a population within 100 miles and that area is a national park. This demonstrates a determination to a hunter-centric model of wildlife management and seemingly ignores the contributions and concerns of wildlife watchers who contribute over a billion dollars to the MA economy. The bear issue also illustrated the state's willingness to ignore the tenets of NAM including the mandate that hunting practices should be sustainable. It is not sustainable when hunting is allowed in populations where they don't currently exist. Exemplifying their attitude about this extension, MassWildlife's website used multiple exclamation marks to announce the expanded hunting season.

Yet, there were 7 separate hearings just to abolish hunting contests. The 'rigged system' that Brooks Fahy has repeatedly described to me regarding wildlife management was rearing its ugly head again. During the meeting I attended, it was abundantly clear that citizens wanted more change, including what I said in my prepared statement citing all the evidence within this book. At least half of the >40 people that spoke wanted more protections, in addition to a ban on contest hunting, such as instituting bag limits, eliminating questionable methods like baiting, and having shorter season lengths. (I was told even more people spoke about these reforms at the first meeting). Senator Cyr's written statement also asked for establishing bag limits to reduce overkill.

Citizens are now definitely aware of the provisions in our CC Act and how carnivores are essentially not protected for half the year in Massachusetts, even though that state has one of the shorter hunting seasons in the country for 'coyotes'. Around that time, Louise spoke with Michael Huguenin, the current Assistant Director of Wildlife, who said he would read over the Act. He did get back to Louise and let her know that he agreed with some of the principles but definitely not others, like the coywolf background that is a major focus of this book or establishing bag limits to avoid overkill or waste.

While it took tremendous effort and 95% public support just to make coyote hunting contests illegal in 2019, it actually happened with endless pressure on state wildlife officials and locally elected officials. It was repeatedly stated by wildlife officials that 'contest hunts wouldn't affect coyote populations', as if the only value they have is getting killed by hunters.

Nevertheless, in December 2019, MassWildlife not only banned contest hunting for all furbearing species (including coyotes, foxes, bobcats, fishers, otters, and raccoons), they also established a wanton waste clause meaning you have to kill an animal like a coyote for a reason (e.g., using its pelt). They also made hunters report a coyote or fox kill within 48 hours, the same requirement for bear and deer. Yet, even with MassWildlife staff reading the CC Act and listening to vast public pressure to do more to protect carnivores (especially coyotes) they did nothing to establish bag limits and still allow unlimited killing of coyotes and other carnivores as long as the hunter is going to use the animal's fur. In fact, they went out of their way to state that all of this effort will not change coyote hunting 'opportunity', bag limits (none), or methods used, as long as hunters use their pelt, as 'one of MassWildlife's core functions is to develop and maintain hunting, fishing, and trapping activities in Massachusetts' even though less than 1% of the population hunts in that state.

The main provisions were essentially to recognize the importance of coyotes and other furbearers, which is indeed important, as the new rules no longer allow people to kill them out of hate or for fun in a group setting. Yet, all other methods, as of 2020, are still game for eastern coyotes in Massachusetts, the state with the 'most' protections for these animals – which of course is a relative statement based on the lack of protections that other states grant them. Unfortunately, citizen preferences still have not been fully acknowledged by the state according to *Testimonials* from numerous residents and social survey peer-reviewed data.

Citizens Can Petition for New Laws

In addition to Massachusetts, residents from other states in the Northeast are making headway on carnivore management. Vermont outlawed coyote hunting contests in 2018, and citizens there, including the Vermont Coyote Coexistence Coalition, Protect Our Wildlife Vermont, and Vermont Wildlife Coalition, are feverishly trying to establish set seasons like in Massachusetts, as well as establishing a wanton waste clause. They have run into the same conservative resistance to change from the upper management staff in that state which exists nationwide, as has the New Hampshire Wildlife Coalition while trying to accomplish similar objectives of carnivore reform. Activists in the adjacent states typically experience the good old boy network resistant to listen to new voices, but those people are having a positive effect by getting legislators and the general public aware of and on board to enact change.

To better reflect the endemic and ecological importance of these predators, I hereby recommend that citizens demand the implementation of both state level *Carnivore Conservation Acts* and for Congress to author a '*National Carnivore Protection (or Conservation) Act*', similar to the Marine Mammal Protection Act or Raptor Protection Act. Because Congress takes a while to enact new laws, it is possible that individual states, including Massachusetts, Vermont, and New Hampshire, through public petitions and legislative assistance, could pioneer these changes in their own state statutes beforehand. That is why Louise and I wrote the CC Act in the first place since anything would be an upgrade from the present levels of carnage currently allowed.

We owe something to these creatures since man's best friend, the domestic dog, evolved directly from gray wolves. In fact, domestic dogs, while different ecologically, are virtually identical to gray wolves genetically. Thus, we literally live with wolves and we know that these animals are social, family-oriented animals. The same applies to all canines.

There are currently animal cruelty laws for harming domestic dogs; think of former NFL-star Michael Vick going to jail for nearly two years for his dog-fighting ring. Yet, a person can buy a moderately priced hunting license enabling them to kill as many coyotes as they want over significant periods of time and then say that they are contributing to "conservation" by purchasing a hunting or trapping license. This is a statement that wildlife agencies also now use to justify and normalize the killing of carnivores, which has drawn the ire of others who believe wildlife has more value than being killed. In most states, you can legally drag pups out of dens and do virtually anything you want to them, shoot a majestic adult out of hate, or gut shoot any age or gender and leave them to die. In Vermont, it is even legal to kill coywolves and hang them from trees, wires, or houses. That is unacceptable and shameful in today's society, as well as undemocratic, since the vast majority of people don't hunt and would prefer to coexist with these animals. Further, it encourages hate and extremist behaviors, actions which have been targeted extensively during the racial protests throughout 2020.

Most people who do hunt do not specifically target wild canids, instead preferring meat on the table such as rabbit, grouse, or deer, which is more publicly accepted since these animals are more common, live at much higher densities, and their bodies are being used for food. Other species, like raptors are misunderstood because they are predators, so to protect them, many nations, states, and local governments have created laws that regulate capture or killing of birds of prey, ensure their proper care in captivity, and protect wild raptors and habitats, especially for species at risk. Interestingly though, while hawks, eagles, and owls are protected by legislation for their important roles in the ecosystem of being scavengers and hunters of small mammals, most land-based carnivores are not. The unfairness that targets predators who have a possibly more dynamic and important ecological niche is quite illogical.

The National (or state) Carnivore Conservation or Protection Act could function like the Migratory Bird Treaty Act, where the random shooting of these species would be illegal or greatly curtailed, at least on our public lands. Private property exceptions could be made. It is important that lawmakers initiate this important Act so foxes, coyotes, wolves, bobcats, and cougars may live and function the way they were intended. This would be the opposite treatment to the way that wolves were permitted to be gunned down almost immediately after being taken off of the Endangered Species List in the Rocky Mountain states a few years ago.

Ballot Initiative

It is important to realize that a Carnivore Conservation or Protection Act could be implemented via a ballot initiative similar to the 1996 Wildlife Protection Act in Massachusetts. Many other states have had similar acts to better protect carnivores including banning baiting, leg-hold traps, and hounding of animals. The most strict ballot provision comes from California where mountain lions are fully protected.

I led a roundtable of 20 people including local NGOs, humane groups, attorneys, and concerned citizens back in 2018 when people were up in arms over the hunting contest that took place on Cape Cod, MA. Folks in that round-table informed the group that ballot initiatives are expensive and usually cost around $1.5 million. That really surprised me. We ended up taking the quickest and cheapest route to ban the contests which was to have our legislators pressure MassWildlife to make the change, which to their credit they rapidly did. However, with modern technology and social media it is hard for me to imagine that a ballot initiative couldn't be generated for a much lesser amount to say 'ban carnivore hunting'. That will take a lot of effort and collaboration by knowledgeable people to make it happen but this is another potential avenue to change laws as described in this chapter.

Unfortunately, politics often gets in the way of rationale wildlife management. Whenever 'outside groups' want input like to change (usually shorten) seasons, ban killing contests, or restrict trapping, hunting groups often say 'leave wildlife management to the professionals'. They adhere to the catchphrases 'professional – or science-based – wildlife management' as code for state agencies to maximize the killing of a given species and to ignore any other science that refutes that notion. They try and normalize killing animals because they claim to pay for wildlife management and say that state agencies support hunting. The fact that the public face of the hunting community condones wildlife killing contests, and that these competitions remain legal in all but six states, is emblematic of the deep divide over wildlife management in the U.S. today.

Hunting groups often state that anyone who disagrees with their viewpoint is an "anti", which is a derogatory term suggesting that those who disagree with killing wildlife for fun are anti-hunters and have no business being a part of wildlife management. They often state that these 'antis' either live out of state or are liberals living in urban areas and belong to radical environmental organizations. A recent article on the public voting on a ballot initiative in November 2020 on wolves being reintroduced to Colorado exemplifies this stereotype. Yet, these people don't state that wildlife management is inherently biased and catered toward hunters and that many of the supposed 'antis' are labeled as such because they support sane laws that also protect wildlife and the people who observe them. Many live in rural areas and are politically conservative, refuting the notion that they are all liberals. This was well stated in a retort to that Colorado ballot initiative article (see above) in Who's Afraid of the Big Bad Wolf: Textual Manipulations in Anti-wolf Rhetoric.

Mark Elbroch, in *The Cougar Conundrum*, established quite clearly that hunters are prioritized over all other stakeholders and agencies even brazenly exclude the non-consumptive public from decision-making despite being the vast majority of Americans today (p. 176). He noted that part of this issue is the fact that hunters fund a large percentage of the budget of state wildlife agencies even though they *do not* fund conservation more broadly (p. 177 and see Chapter 8 of this book). This funding scheme is purposeful for fear of hunting groups losing power; e.g., the National Rifle Association has stymied any attempts of inclusiveness (p. 183).

Americans increasingly value their wildlife and their place in the environment, with research showing respondents reporting more positive attitudes toward carnivores in recent times. A National Carnivore Conservation or Protection Act would best reflect our growing understanding and acceptance of the place of all species, especially ecologically important predators. At the end of this book, I provide links of people and agencies to contact so you can act to help better protect carnivores.

Chapter 10: A Primer on Political Obstruction of Research

I have to admit; the next few chapters were extremely difficult to write. I vacillated between anger and sadness to think of what has happened to my research career in the past decade plus. It took me two days just to get the motivation to begin writing this section, and I noticed I was much more tired and irritable during that week, which are all indicators of depression. That would be the exact opposite to a month before when it took me just 6 weeks, from April-May 2020, to write a 550+ page work, *The Trip of a Lifetime*, based on my cross country journey out west in summer 2019. On that adventure, I felt like bionic man as I did a ridiculous amount of activities in a relatively short period of time. I was full of spirits and did not need nearly the same amount of sleep compared to the week I wrote this. It is amazing what one's mental outlook can do to affect one's energy level.

I realize that inking these words will likely not help my cause with a state that is not amenable to using scientific findings which doesn't suit their pro-hunting, maximum utilization agenda. However, I am at a crossroads and need to tell my story. I have no research career and have been in limbo professionally for over a decade. It is due time that I provide a detailed account of what happened. As discussed in the *Forward*, the injustice protests throughout 2020 provided an inspiration for me to tell my story. There are similar levels of corruption and privilege in all levels of government, especially ones that ascribe to a conservative, rural ideology resistant to change. Hopefully explaining my situation might rally enough people to fight for the inequity of how scientists are treated when they go against the grain. Who knows, maybe by publishing this, I will find the right person(s) to help me regain my career. Stranger things have happened. I hope you appreciate my honesty and candor.

Obtaining research permits, which are controlled by a state agency whose primary mission is to provide hunting opportunities, is an obvious conflict of interest. But trapping & studying them is critical to learning about the animal, such as this large 45 pound male coywolf.

Coming Out

Government corruption related to pandering to special interests is now capturing headlines more than ever. As a scientist with a specialization in canid and predator biology, I'm greatly concerned about an issue within my field that receives little if any meaningful media coverage. State wildlife agencies cater almost exclusively to narrow user groups despite changing demographics of public trust resources. When my work as an independent scientist challenged the status quo policy positions within MassWildlife my career was essentially terminated. In 2016, I wrote a detailed testimonial by "coming out" and explaining what the state did to me. It was intended to give readers a specific, informed first-hand account of the power that agencies wield on obstructing productive field work and discriminating against freedom of speech when scientists challenge their authoritative policies. It was my hope that others may find the courage and inspiration to document similar discrimination and abuses, and that much needed reform may be jump-started within wildlife institutions.

Unfortunately, the testimonial never had the impact I hoped it would. I know that many people wrote to the Governor of Massachusetts to demand something be done. At the time, I had an investigative reporter working on the story so I patiently waited thinking that this published piece would help me the most in exposing the state's actions toward me. So, in fall 2016 I turned down offers from National Public Radio (NPR) and a couple of other news outlets pleading with them that I would rather have the exposé piece explain the abuse, rather than me sound like I am complaining on air. They agreed to give the story some more time. Unfortunately, and devastatingly to my cause, the story never materialized. I kept my proverbial eggs in one basket, and they all broke. The journalist had multiple personal situations happen around the same time, and then moved. Plus, it was a major story and news outlets do not like to publish an article of this nature from an independent writer. A couple of years later, I talked with an environmental writer for the Washington Post and that person told me it is risky to publish something so earth shattering, especially if the writer isn't a staff member. So, 2017 and 2018 went by and no story materialized, and interest was lost with a new President of the U.S. that brought with him a host of other attention-grabbing news.

I am using this opportunity as my second chance to explain what happened. I describe everything in detail, and hope that I made it more reader friendly. I hope you are as outraged as many have been by this unfortunate chain of events. It is important to realize that this book and my situation will go nowhere without activism. People need to write to MassWildlife, to the Governor, to Senators and other legislators, and to organize and let our officials know that this isn't right. I provide links to all these parties at the end of the book.

My story is not unique to Massachusetts. It could occur virtually anywhere in the United States because all wildlife agencies are structured to cater to hunting and trapping interests with little oversight even though they represent a small fraction of the total population. Since Massachusetts has some of the strongest wildlife protection laws (e.g., their 5 month 'coyote' hunting season is actually among the shortest in the United States), there is the real possibility that it could be just as bad, or worse, in more rural states.

Background

I noted in my *Testimonial* that "I am a father, volunteer coach for youth basketball and football, and author of two books", to set up the document as immediately being questionable as to how this could happen to an honest citizen especially since I completed a Master's and Doctoral degree related to the study of eastern coyotes and I have published more than 40 professional peer-reviewed/edited publications on this topic. Despite this, I have been unable to pursue my career and research goals for the past decade because MassWildlife has repeatedly obstructed my work and career by denying permits related to my research and interfering with my professional associations because my position and personal ideology contradicts their policies for carnivore management. I hope that by chronicling my experiences, institutional change within the department might follow.

It is important to bear in mind at the outset that the history of science parallels a history of people and organizations – from churches to management entities – that have resisted new discoveries that conflict with conventional wisdom and personal ideology. Research obstruction by government agencies is common and has been known to interfere with the careers of the people who discovered climate change/global warming, acid rain, the dangers of tobacco, and even more recently to silence scientists who (along with residents) found lead contaminations in the public water supply in Flint, Michigan. Clearly there are costs to doing unique science.

Permits are needed to trap, sedate, examine *(Top Right:* such as the lactating female, and radio-collar then release coyotes. Meanwhile, MassWildlife allows anyone to purchase a ~$30 license to hunt them and other species. Currently, a hunter with that general license can shoot 2-3 deer and unlimited numbers of ‘coyotes’ for nearly half the year in Massachusetts, among other species.

The problems I've encountered are not all that surprising given the structure of a typical state wildlife agency, but they are dismal procedures for an institution that is charged with the responsible management of a public trust resource, especially given public sentiment about carnivores discussed in the previous chapter. State wildlife agencies generally hold exclusive power over wildlife and policy has often been crafted exclusively for narrow special interest groups, like hunters, instead of managing for a broad constituency or for greater ecological health or biodiversity. States often partially or wholly fund department budgets through hunter licensing. Consequently, the state agencies justify a bias for hunting interests whereby a citizenry that is concerned for wildlife is willfully ignored or at the very least, their views are downplayed. Hence, the statements MassWildlife made during the effort to ban contest hunting in 2019 in Chapter 9, that despite public protest to the many ways carnivores are killed, they stated that providing hunting opportunities was their primary agency objective.

Evidence suggests that revising wildlife management policies would better serve the public trust and accommodate a broader citizenry. For example, in MA and nationwide, demographics are changing and with them so are uses of public trust resources. In Massachusetts in 2011 alone, 1.8 million people spent $1.3 billion on wildlife associated recreation. That is 32.6 times more people and 14.6 times more money than that spent on hunting in that state (see page 4 of the MA survey). Also, recent research estimates that over 90% of funding for wildlife conservation comes from non-hunters despite the repeated claims by wildlife agencies that hunters pay for wildlife management. While hunters may pay agency personnel their salaries, there are many other sources of funding that contribute to wildlife conservation. This is especially true when considering the management of carnivores such as coyotes and wolves. These facts set the agency up for an obvious conflict of interest with how to manage predators. In fact, some writers have even claimed that the financial contribution of hunters to agency coffers, while significant, is nearly always overstated. Promoting a narrative that wildlife can't survive without hunters is part of a larger effort to defend the status quo in wildlife governance by those who currently enjoy privileged status and don't want to give it up.

As I've discussed in this book, state wildlife management policies constitute a long history of unjust persecution of carnivores including year-round coyote hunting seasons in most states. These agencies routinely ignore the widespread ecological importance of carnivores and allow virtually limitless killing of these species with no scientifically sound justification, other than to give hunters 'opportunity' to kill things. I previously mentioned that Massachusetts has one of the most protective states regarding eastern coyote management, yet they are hunted for nearly half the year with few restrictions. They can be baited, called in with electronic predators calls, hounded with dogs, hunted at night, and killed with no restrictions on size, age, sex, or amount. All of this is still legal even after the 7 hearings that MassWildlife held in 2019 to abolish hunting contests. Yet, hunting seasons do not consider their tight knit family unit or their ability to work together as a group to survive.

Management strategies continue to rely on outdated models that are focused on killing species that compete for game, or alternatively on a maximum sustained yield (i.e., killing as many of a species as possible before "supply" decreases) philosophy. The touted "North American Model of Wildlife Management" may work well for game birds, rabbits, and ungulates, like deer, but is not an apt model for carnivores. At the least, state wildlife agencies that are entrusted with the care of public trust resources that belong to its citizens collectively have a duty to use best management practices, be open to adaptive management strategies, and agree to incorporate the best available science while listening to all of their constituents. Yet, funding schemes create a conflict of interest which have created an institution where scientific integrity and input are devalued and dismissed, citizens opposed to wanton waste and aggressive hunting and killing are usually ignored or have to petition a state to change the laws, and adaptive management policies are slow to implement or woefully bypassed. We are seeing this nationwide with just about all branches of science where unqualified people are put in charge of agencies without any scientific training. The good news is that most states, including MassWildlife, have biologists with adequate training. Now it is up to the public to force them to institute scientifically and culturally justified management plans that incorporate an animal's ecological and behavioral ecology.

As described in detail in my book *Suburban Howls*, I was very closely bonded to the litter of 5 eastern coyotes who I hand-raised. It has been over 15 years since the zoo separated me and I still miss them and am still bitter about being removed from them without my consent. This event sparked the downfall of my relationship with the state.

Above: The only way to accurately describe my relationship with the captive litter was love. They were always there to greet me and I was there to see them nearly every day of their first 3 years of life. *Right*: This was literally the last day I saw *Caon*, *Cane*, and *Lupe*, almost like they knew I would never see them again as they howled their hearts out.

How the Obstruction Started

In my case, the problems began when I published work in 2006-2007 that contradicted MassWildlife and Town of Barnstable department policy when I expressed profound concerns about their handling of carnivores. Since then, my scientific permits have been denied, I have discovered that the agency influenced and disrupted my professional relationships with academic institutions and other peers, and my research-based career was halted. Ironically, independent scientists, such as university researchers, are often in the best position to help shape policy that could embrace healthier ecosystem-based management of resources and address ordinary citizens' concerns for better wildlife management. They are often the creators of the body of "best available science" and are less likely to be biased or politically motivated than government (state or federal) biologists, where monetary influence is rampant. Yet, instead of readily embracing new data, wildlife agencies see contrary research findings as a threat to their authority.

To be fair, state wildlife agencies are mostly composed of sincere, well-intentioned, hardworking people. I cannot understate that enough. Still, there is a persistent draconian, static resistance to change from the very top down. Most importantly, Wildlife Directors are nearly always hand selected to represent the most conservative, rural, consumptive paradigm no matter what state one lives in.

As a scientist and a concerned citizen, I believe these agencies have a duty to protect the public trust in wildlife and that this duty extends to considering and integrating relevant research and data into their management strategies, especially the wide body of science that has erupted in the past 10 years indicating the ecological importance of carnivores and the public's distaste for killing them. Unfortunately, it is not uncommon for state wildlife agencies to stifle research that they don't want pursued, that conflicts with their agency mission, or that they subjectively have little interest in. When this paradigm is challenged by independent scientists, wildlife agencies may discredit or hinder independent scientists who are neither protected by university affiliation nor under tenured employment. When I challenged agency policy, MassWildlife created a campaign of retribution that has, for all intents and purposes, ended my research career. This account documents the process of this systematic occurrence over time.

From 1998-2006, I conducted field studies on eastern coyotes as part of my Master's and Doctoral degrees. My research required scientific collection permits to box trap, radio-collar, and release study subjects, as discussed in Chapter 4, to study their ecology both in the Boston area and at my long-term Cape Cod study site (see Chapter 5). It also included conducting a separate side project that consisted of raising a captive litter of eastern coyotes that were housed at the Stone Zoo.

As I made my way through graduate school, I did not have difficulty obtaining research permits and was able to renew scientific collecting permits easily. I hadn't published many papers in professional journals so there was little conflict of interest with the wildlife agency and my research. Looking back, the study at the zoo, which began in 2002, was likely the beginning of my downfall. I based that study on models of socialized canids like those used by respected institutions such as the International Wolf Center in Minnesota, the Wolf Conservation Center in New York, and Wolf Park in Indiana. The key to this study and the behavioral data that I collected on the captive animals depended on hand-rearing them with regular interaction between the canines and myself. As my book *Suburban Howls* documents, part way through the study, the zoo changed the in-place study parameters, arguing that the animals should have no interaction with me after they became aggressive with each other. The truth was they never liked the interaction I had with the coyotes and repeatedly mentioned that they didn't like how world famous zoos, such as the San Diego Wild Animal Park, interacted with certain species like cheetahs. At that point, however, the study would have been impractical without the human interaction component. Still, in 2005, the zoo stopped giving me access to the animals that I hand-reared for 3 years.

When the zoo informed me that I could no longer interact with the animals, I was devastated. I couldn't think straight for months. It was literally the equivalent for me of losing family members. I barely held on long enough to obtain my doctorate degree.

My advisor at Boston College, Dr. Eric Strauss, and I met with Dr. Tom French of MassWildlife when all that went down. We asked MassWildlife to intervene. Instead, the state predictably sided with the zoo. Both institutions were resistant to change. This type of work with coywolves was routine in facilities focusing on using socialized canids for research, but at that time it was resisted because it dispelled numerous myths about the much-maligned wild canid and involved direct hands-on contact with these animals.

Releasing a radio-collared animal from the trap once it is awake from the sedation process is a momentous event because, from a utilitarian standpoint, it can now be tracked and repeatedly found. That allows one to study its life history, documenting most of the things we have discussed in the previous chapters.

Unable to reformat the study without the necessary socialization with the coyotes, I abandoned it altogether. The animals had bonded with me and it was quite painful and disruptive personally and professionally to be forced to lose the study unless I 'observed the animals from outside the exhibit', as the zoo proposed. That wasn't going to work for me since the data gathering would not be consistent and both the coyotes and I would, in effect, be punished by interactions limited by no contact. It felt like visiting family members in jail. Not only would the study suffer, but the coyotes were having difficulty with the sudden unnatural constraints to our normal research-related contact that they had become accustomed to since I hand-reared them from infancy. Zookeepers repeatedly informed me that after this went down, the coyotes paced the perimeter of the cage, clearly looking for me to show up. All of this occurred even with me signing a waiver that held the zoo harmless if something happened to me while I was with the animals.

A Website Becomes a Problem

As the zoo worked to constrain the study in 2005, I began to document the institutions' decisions on my website (originally I had a website though Boston College, then transferred to EasternCoyoteResearch.com in 2007). It was just before the social media era and it was a good outlet for me to vent my frustration. Concurrently, I also documented the fate of many of my wild research subjects. In the course of doing my field research, many of the animals in the study were needlessly shot by hunters, and in some cases on Cape Cod hunters appeared to be going out of their way to kill research animals. I'm certain the state knew about this too, and it made no difference to them. The website became a place to document the killing of these highly social and intelligent animals and of the unwillingness of MassWildlife to provide even the most meager of protections for these collared research animals. I was naïve and never knew at the time that publishing all of this in detail would anger the state so much. I had a rather large following that checked in regularly to follow my research progress so I thought I was being forthcoming to an interested audience. I think it took the state back how one person, through a simple website, could become such a lightning rod.

It is difficult to comprehend that people have many more freedoms to kill these animals than to study them but until laws are changed and the composition of state wildlife agencies is diversified, I will not be the only person who loses his/her career over obvious political obstruction. Some states, like Idaho and Wyoming, don’t even hide their biases.

In the pursuit to protect the research animals, I sent a letter to the town of Barnstable in 2006 upon completion of my Doctoral Degree. I asked for help in creating a non-hunting refuge in the town, similar to our popular national parks, where wildlife could be watched and studied without people killing them. Consequently, I also published *Suburban Howls* in 2007 which documented the first decade of my research. Together, the actions I sought to study and protect coyotes brought me into a head-to-head conflict with the state's policies.

I immediately received flak for my comments. Dr. Rob Deblinger, the Deputy Director of MassWildlife at the time, immediately called a close colleague of mine, Dr. Peter Auger, who was my former high school Ecology teacher. Deblinger asked Auger why in the world I would write such a document. It is important to realize that the Town of Barnstable consists of a few cronies at the top of the natural resources division that were tied to MassWildlife and the hunting industry, so they immediately forwarded my letter to the state. Then, not surprisingly, the town denied this request despite a sizable petition from Barnstable High School students, where I taught from 2006-2009, to enact some sort of hunting ban. That event reminded me of something Pete once told me, which I still chuckle over to this day and paraphrase here, "There could be an endangered lichen or fungus found that only grows on the top of a tree and they [MassWildlife] would say 'let's have a deer hunt' as a response to that discovery to protect that species."

While dismissing that petition to lessen hunting, as well as all of the current scientific research findings which indicate that wild canids are social, sentient, and intelligent animals whose presence is importance for maintaining ecosystem health, MassWildlife decided in 2007 to increase the "coyote" hunting season by 5 weeks to about half the year and established provisions to make it easier for Problem Animal Control agents to kill them. They also loosened the restrictions on weapon use, allowing long-range rifles as legal to use to hunt and shoot 'coyotes'. I was informed that there was a single meeting where deer hunters complained of 'too many coyotes and not enough deer', seemingly not understanding their actual ecology, and that prompted the state to act.

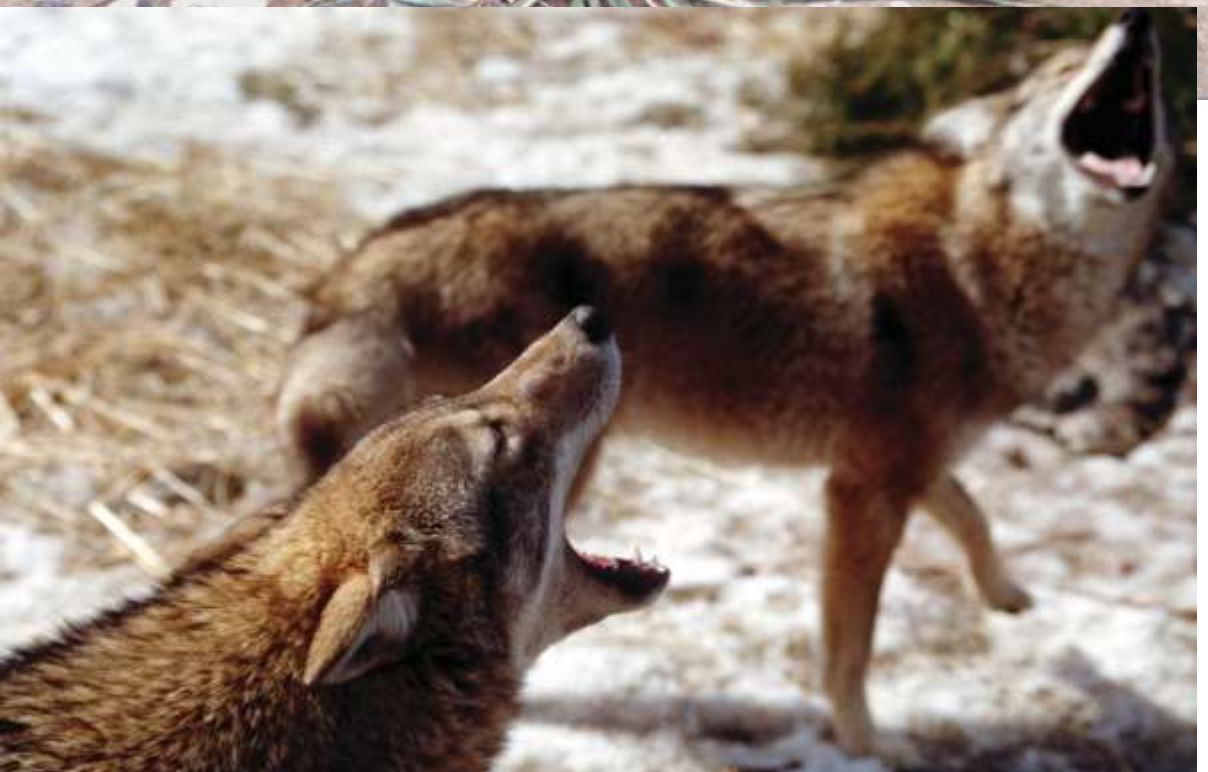
Jennifer Jackman of Salem State documented that the majority of citizens were against the regulatory changes. I wrote the state twice in 2006-2007 expressing my disapproval for the season extension, and attended a meeting where the state was blasted for this proposal. Person after person disapproved of the soon-to-be-enacted regulations, including a separate hearing discussion on whether to re-allow foot-hold traps, which were banned in 1996 via ballot initiative. It was clear the public was against increased hunting of carnivores, yet the state was extending the season nonetheless.

Sadly, but perhaps not ironically, this occurred during the same year that *Suburban Howls* was published, which offered a plea to better conserve, not kill, this creature. At that point, I was now able to sell my book on my website, as well as continue to document the fate of existing radio-marked individuals. This level of entrepreneurism wasn't the norm in wildlife management circles where funding usually comes from the wildlife agency, and the researcher engages in a project of the state's choosing.

Abundant scientific data now recognizes the absolute necessity of predators in maintaining vigorous ecological communities. Yet, as I was about to find out, Ph.D.-level scientists had to jump through hoops just to get permits to study the very same creature that any lay person can buy a hunting license to go out and kill in unlimited numbers (including radio-collared study animals) in all northeastern states. I also learned the hard way that biologists, like most scientists, have to walk on egg-shells and not say or do anything too political that will affect their permit or funding status. Yet, hunters in Massachusetts routinely brag about literally slaughtering coyotes, with absolutely no retribution taken against them. It is the truth that speaking up against killing carnivores is now a death sentence to a wildlife biologist's career as Rob Wielgus, a formerly pre-eminent biologist in Washington state, found out first hand. He was forced to leave his university with a settlement when he spoke the truth about ranchers luring livestock to wolf pack core use areas, which ultimately caused the large canines to prey on them.

Mark Elbroch in *The Cougar Conundrum* noted that this pro-hunting bias is so prevalent that it affects research in Wyoming and Idaho where proposals for studies that emphasize conservation or ecological importance are denied or forced to be revised (p. 184). Idaho now does their own, assumingly pre-determined, research on mountain lions. I find this astounding, but sadly true, in 2020 when science is supposed to be a core tenet in wildlife management.

One of the problems with being a scientist in America is that they have absolutely no freedom of speech. Alas, I can't imagine a more undemocratic and biased response from government but there is case after case of scientists being obstructed when they become a whistleblower. This point will no doubt be denied upon publication of this book, but it is the downright truth, and I provide overwhelming evidence documenting how this played out in the next 3 chapters.



Eastern coyotes being eastern coyotes. Establishing additional ‘eastern National Parks’, and other protected areas, will allow them to live at natural densities and fulfill their ecological niche of being the top carnivore in the region.

Chapter 11: The Terrible Trio

"I love America more than any other country in the world, and exactly for this reason, I insist on the right to criticize her perpetually."

- James Baldwin

In looking back at those early years (2006-07), I was very naïve about the potential consequences of bucking a bureaucratic 'we've always done it this way' governmental system. John Theberge, in his classic 1998 book *Wolf Country*, commented that bureaucratic workplaces are tainted by 'issue avoiders', rather than 'issue solvers'. He stated that "(wildlife agencies) will throw endless barriers in your way (p. 181)." He wrote from the perspective of actual experience as he tried to study and protect the wolves in Algonquin Park, Ontario over a 12-year study. Theberge described (p. 183) how researchers who go against the tide will suffer in a series of cascading actions designed to stop their work and just make them 'go away'. In his experience, the first step in the deliberate process was action taken to discredit him and occurred as the agency sought minor permit violations to paint him as a petty criminal and to document anything they could label as "non-compliance". Then, the wildlife agencies refuted or ignored his research findings and questioned his methodology and the need for the research. Finally, further attempts were made to either discredit him or to shut down his research. I read this book at the very beginning of my post-college research career. Reflecting back over 20 years later, I am astonished to re-read Theberge's words and see how this process played out for (or should I say, against) me in a nearly identical fashion.

An Institutional Campaign of Retribution and Obstruction

Starting in 2007, my real problems began. Having finished my graduate degrees in late 2005/early 2006, now my former doctoral advisor, Dr. Eric Strauss, at Boston College and I both found our methodology and research consistently under heightened scrutiny, despite well-defined research goals and clearly articulated methodology. Tom O'Shea, Assistant Director of Wildlife for the state until 2013, was a trusted contact at the time, and a straight shooter. He, and a couple of other mid-level employees at MassWildlife, including a previous Furbearer Biologist, had joined me in the field a couple of times to track coyotes and see the captive coyotes at the zoo. I had always tried to include interested parties, including the state, on my research endeavors.

O'Shea informed Eric and me that this situation was highly political and he was instructed to make our research more difficult by questioning all aspects of the study. He indicated that my independence, including publishing a detailed book soon after finishing grad school, had caused jealousy within the department, further igniting an already flammable situation. We had to go through multiple drafts of our proposal to continue studying the same animal that we had already been permitted to investigate for the prior decade. Plus, I was working at Barnstable High School, my alma mater, at the time, as Boston College would not hire me into a research position, despite Eric's best efforts. To this day, I am not sure why Boston College was disinterested in our research and the Environmental Studies program in general. Ultimately, it caused Eric to leave the university.

Due to the deliberate obstruction and delay of our research proposals, we had no permits to trap and collar any new study subjects for most of 2007. It wasn't until 2008 that we finally received new permits. In that year, I captured 17 eastern coyotes in box traps that year to renew the study, and 2 more at the very beginning of 2009. Ironically, I was still being told by wildlife management professionals that you can't capture coyotes in cage traps, as they are too wary to enter them. I guess those 19 animals never listened!

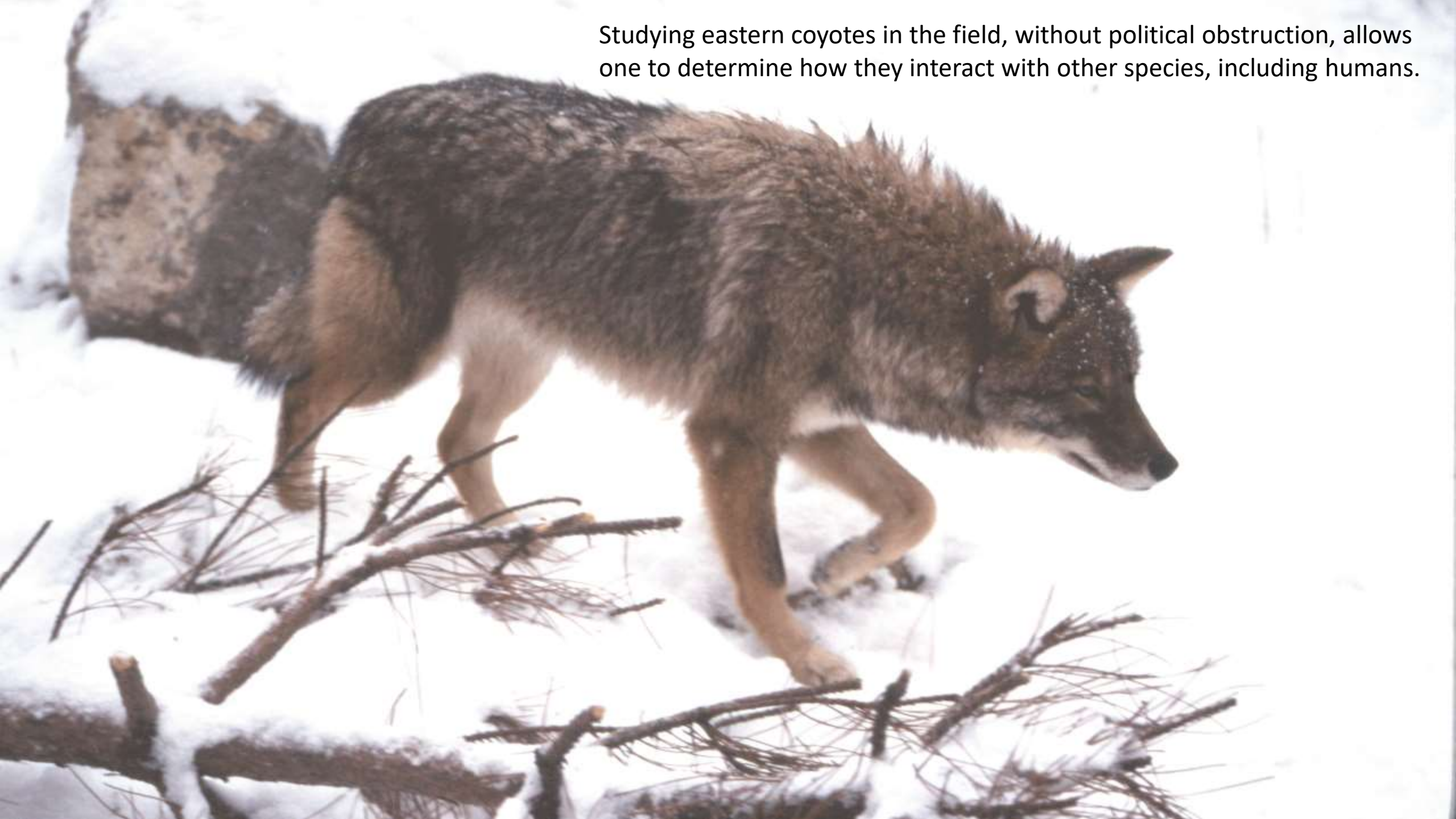
Previously, while our permits and research stagnated, we lost more than a few radio-collared subject animals to hunters and didn't have many remaining on the airwaves before we received those new permits. The state wildlife department freely issues ~$30 hunting licenses (including online), without reserve, to anyone who wants to kill coyotes, even to those with an outward professed hatred of them, but our own studies continued to be stymied by an inability to obtain non-lethal research permits. The injustice of my treatment as a scientist and for the research animals lost through hunting created a deep-seated negativity that I vented on my website. I had a section of my Eastern Coyote Research business called "Outings". It was similar to safaris in nature preserves where I took people out for periods of time ranging from a few hours to multi-day excursions. People were able to experience nature with a real-life biologist. It was a great way for me to gain valuable funds for my research, and for people to see the true behavior of these predators. Losing valuable study subjects was devasting to my research and to learn about individual animals using the landscapes. It also affected my business which meant nothing to officials within the Town of Barnstable and MassWilldife.

Nowadays, you see people post updates and rants on Facebook, Twitter, and other social media sites, but personal websites were the original mechanism to quickly release information that many people could see at once. Instead of seeing this as a real issue since so many people wrote to the town and state about the value of these programs, this just angered those entrenched officials. I was clearly trying to do something creative and different, in the true spirit of entrepreneurism, and this interfered with their business since they were also catering to special interests albeit in a government capacity.

In that same time frame, I was continuing a program of public speaking venues including schools, outdoor clubs, local libraries, and environmental groups to discuss my research and share information on my data gathered on the eastern coyote. The talks continue to be ongoing, and are always well received and highly attended. It is difficult for me to be positive after what happened with my research at the Stone Zoo and then the permit fiasco, but I nonetheless continue to educate people about eastern coyote ecology and behavior, and the politics associated with studying them.

The Meeting that Ended it All

After a productive 2008, with the study then back in full swing, it killed me when Rob Deblinger and Tom French contacted Eric wanting to meet with us yet again. I had been excited to have over 10 coywolves on the 'air' in and around the town of Barnstable going into 2009, and was hoping to take the study to the next level. I had a list of people that joined me for multi-day trips. It was an exciting time to study these animals. Yet, the state was once again questioning our research. It was downright angering. I repeatedly thought about how this agency goes out of their way to allow people to kill them. Their department is set up to make it very easy to purchase a hunting permit, including online. In fact, they have the same sort of independent spirit, American Dream type ideology of doing what one wants to do that I have. I get it. But at the same time, they were repeatedly preventing activities from taking place that they didn't want to have interfere with their personal and professional ideology. It was the ultimate in hypocrisy, as has been the case with U.S. Governments agencies throughout our nation's history.



Studying eastern coyotes in the field, without political obstruction, allows one to determine how they interact with other species, including humans.

So, by early 2009, the handwriting was on the wall as MassWildlife started its real vendetta against me. Throughout a series of separate 'business meetings' with Eric in February and me in March, the state determined that my university affiliation with Boston College had terminated because I had completed my doctoral studies, even though Boston College was still sponsoring the research. In a similar vein of the treatment that Theberge experienced, MassWildlife also raised a series of trivial 'non-compliance' issues. The list of cited violations included 'not labeling a trap' (which could have been pulled off at any time by anyone), 'trapping in a residential area' (my backyard) which was not prohibited but they stated that I supposedly 'used poor judgment' in doing that (despite successfully radio-collaring four study subjects there), and they alleged that we also sent in annual reports late. They also claimed I trapped out of season in January 2009 when I captured those 2 study subjects even though we had always continued our research as we wrote annual reports. In fact, as soon as January 1st came, I would write an annual end-of-year report and send it to Eric, who read it over, edited it, and then forwarded it to them. That total process usually took 4-5 weeks, a relatively short time when looking at other programs, especially considering that Eric and I weren't getting paid to do this even though it was necessary, but added work. In Yellowstone National Park, researchers working full time on the Wolf Project might take over 6 months or more to complete and publish their annual reports. It was clear that MassWildlife was trying to use anything against us to stop the research. Because they never funded any of the work, and thus couldn't simply pull the money off the table, they had to find these non-compliance issues to justify their stance.

During the March 2009 meeting with MassWildlife, which included Tom French and Rob Deblinger, they informed me that people in the Town of Barnstable wanted to stop my work. I spoke out during the meeting about how the state was biasedly listening just to a tiny percent of people that held their same ideology. I had worked with many people throughout the town over the years including the police and some of the town's very own natural resource law enforcement staff. I had even invited town officials to capture events where they saw me radio-collar and then eventually release those animals later that day. They also joined me in the summer at rendezvous sites to watch coywolf families interact. Yet, it was clear that Dan Horn, the Director of Marine and Environmental Affairs, questioned my research even though never to me directly. I heard a few murmurs indicating that, enough to know it was definitely true. He outright complained about Peter Auger's use of town owned properties on Sandy Neck Beach to educate students, which he did for over 30 years. Several people told me about that which just got me to shake my head after knowing that Dr. Auger inspired me and others to choose the field of ecology as a career aspiration. Little did I know that just a few employees in Barnstable, my hometown, would team up with the state to totally discredit me. That was in the making with more to come.

Literally hundreds of people from all walks of life, including town employees, have asked me, starting way back in early 2009, why I'm not doing this research anymore. It is hard not to answer that question without extreme bitterness and outright anger. After a decade of reflecting on my situation, it is beyond obvious that specific individuals had always questioned my research and worked to taint my reputation locally. MassWildlife cherry-picked these people to give a tainted perspective of who I was. Their collective ingrained bias against carnivores like coyotes made it impossible for them to digest research that contradicted their prejudice even when both the study and my work received positive feedback and support from many with whom I was in contact or worked with, including numerous hunters, the police, and especially the general public.

Eric Strauss and I even met with the Town Manager of Barnstable in March 2009, just before I met with the state. Along with John Klimm, Dan Horn and Charlie Lewis, Barnstable Animal Control officer, attended. Eric eloquently explained the importance of our research and I chimed in how I was planning on making the research less political as my goal all along has been to make it a long-term study. They kept bringing up minor issues and complaints by individual residents. I explained that I had talked to these people, including removing a trap in my semi-rural backyard that captured 4 coyotes in 2008. My research was over a decade old and the overall amount of complaints were incredibly low. Select town employees and the state were focusing on all of the negative aspects of the research. We left the meeting and I distinctly remembering saying to Eric, "They honestly have a vision that doesn't extend past their immediate shadow. And these are some of the leaders of our town." That got a big chuckle from him. Consider that Lewis would routinely drive by me at a particular late-summer rendezvous site near his house, and never once would say anything positive about what I was doing, even when I had students with me, yet always made it a point to slow down or stop and question why I was doing what I was doing, or that the coyotes were causing a problem in the area. Yup, those are the leaders of our town, I thought. Thinking back, I am not surprised at all that those were the faces at the town meeting.

At the MassWildlife meeting, Tom French kept bringing up my website and how that was the cause of most of the problems. I acknowledged that I would be toning it down and definitely focusing more on my research as I realized it was politically divisive. I explained that a lot had happened in my life, starting with the loss of my "family" members at the zoo. He explicitly told me to get rid of certain segments of my website, like the Field Updates section. I told him that he was now trying to control my freedom of speech. I repeated that I would be toning down my posts, but I should be allowed to have my own voice at the same time. Rob Deblinger, shortly after, said directly that I do not want to mess with them, explicitly stating that they could make my life very difficult. I tried to bring up all of the positive things I had done and that so many people supported my research, and it didn't have much of an effect. I remember questioning why they kept focusing on all of the negative aspects. I had no idea how true Rob's words would be a decade later.

Ambush behavior is common in group play and hunting in both captive (pictured here) and wild eastern coyotes. Having permits to study them is key to documenting these behaviors.

When I left the March 2009 meeting, I honestly believed that I had satisfied all requests and complaints that were voiced and that I would be receiving new permits and now would be able to work independently under the auspices of my organization *Eastern Coyote/Coywolf Research*. In an attempt to defuse the situation, I reiterated that I would conduct my research in a much 'quieter' fashion by making less public posts of my research activities and focusing more on my professional publications. Even so, and despite the precautions, shortly after that meeting I received a letter from the Director of MassWildlife, Wayne MacCallum, denying the permits. Deblinger had actually called me a couple days before to inform that I would be getting a denial letter in the mail. While I appreciated his candor, I remember distinctly sitting in my classroom at Barnstable High School and feeling numb as he gave me the bad news. I had that deep pit feeling in my stomach. It's hard to describe what it was like to have students come into the classroom moments later and have to teach them. I vacillated between intense bouts of anger and incredible sadness. They (including the personnel within the Town of Barnstable) put no thought into my career nor the important research taking place. Or possibly they weren't able to comprehend it. They were all tired of dealing with controversy and it was easier for them to shut down one researcher versus the numerous people that want to continue to kill them. As Theberge said, they just wanted to avoid and be done with the issue.

The MassWildlife Mafia

The letter was predictable from Wayne MacCallum as it listed the many supposed 'non-compliance' issues that I had previously discussed and I thought resolved with his staff. It discussed the numerous complaints about my research which was completely cherry-picked as I told them in the meeting. I remember calling Eric, who was also going through personal issues at Boston College at the time, and he just took a deep pause and sighed, realizing how incredibly difficult MassWildlife was being. Little did I know at the time, but this would be one of the last conversations I had with Eric before he accepted a university position in California. Over the years, I've had so many people, ranging all the way up to aides of state senators, say how disingenuous MassWildlife is and what a strange organization it is. One guy, a hunter of all things, used even more colorful language that I can't print here to explain the upper echelon personnel.

Curiously, none of the non-compliance issues had anything to do with my website, even though Eric and others believe that it had everything to do with the situation. They clearly didn't like an independent scientist speaking his mind, especially as it conflicted with department policy. This, of course, is in contrast with hunters that openly call anyone names that don't agree with them killing coyotes for fun. Most telling was a comment posted on the Powderhorn Outfitters' (a gunshop that sponsored two coyote hunting contests before they were banned) public Facebook page (go to February 2018 for hunting contest posts and pictures) in response to the proposed ban on killing contests: "I am completely against any new regulations ... keep the dam pics off social media (and) the libtards wont even know this goes on". I have often heard that 'Libtard' slight to anyone interested in protecting wildlife even though there is nearly always bipartisan support for wildlife. However, the desire to kill predators is usually a right-winged war on wildlife. For example, during a protest against contest hunting, an article identified many of the hunters in the audience as being part of anti-government extremist movements, including the Oath Keepers and American Patriot Three Percenters. Yes, that even occurs on Cape Cod, MA. These people are all free to buy hunting licenses and kill unlimited numbers of coyotes every year, even with the contest ban in effect starting in 2020. The double standard that applies to hunters versus scientists is astounding.

It was notable that the March 2009 meeting was not conducted by the Director of MassWildlife, but by three of his immediate subordinates including Rob Deblinger and Tom French. In fact, in all of the many years conducting research and giving public talks in the state, I have never actually met Wayne MacCullum. At the time, it baffled me that the person ultimately responsible for denying my research, and for hobbling my career, never met with me face to face. But now, understanding the department better, it doesn't surprise me in the least. They run a mafia-like organization where certain people meet with you (the henchmen in a mob), while others make the decisions (the mob boss). In that way they can have plausible deniability if they are ever questioned as to their actions. I have thought thousands of times in the past decade or so that they no doubt felt that the worst situation for them would be to just be forced to finally hand over permits, even if it was years later. They have no accountability that would affect their job situation so why should they give me permits until forced to? A couple of times they mentioned funding the study to Eric, especially after public press caught on to what they were doing to me, but ultimately that never happened.

The lack of compassion for the behavior and tight family bonds of highly intelligent predators or for the biologists who study them is something that wildlife agencies specialize in. This could only be the case if narrow, special-interests make up the agencies.

The early 2009 meetings became obvious: They were for the Director to separate me from Eric and a research institution, and then to promptly deny the research permits. The meeting was not intended to resolve "concerns", rather it served as an exercise to go through the motions to satisfy procedural and administrative process. MacCullum knew exactly what he was doing.

I've read about the iron triangle in wildlife management. This is where agencies like MassWildlife, traditional commodity users like hunters, and policy makers which could involve the Director of MassWildlife or the Board that oversees them, limit access to resource management decision processes to those outside the triangles. Ultimately, this secrecy and special-interest focus creates social tension and conflict, as evidenced in the 7 meetings in 2019 to ban contest hunting. Although the iron triangle concept may be an overly simplistic analogy to describe the complexities of contemporary state wildlife management, wildlife board and commission processes used in many states have been identified in the literature as a governance structure in need of reform. I was experiencing this to a T, with one group of people meeting with me and another essentially determining my research future, with an outside group (the Town of Barnstable) backing them up. Curiously, all of the people making the decision never went into the field or cared to learn about my research. All the people that I had worked with, including at MassWildlife and within the Town of Barnstable, were left out of this decision-making process.

After having lost my zoo study, the denial of permits was devastating to me. Still, I was naïve about the power of the agency to completely halt my career. But I was beginning to learn. Since I had lost access to the captive group of study subjects that I hand-raised a couple of years earlier, I had effectively lost all of my research, and my way of life, all in the span of a few short years.

It was hard for me to function after the transpiration of events in early 2009 after the letter arrived in my mailbox. I had no purpose even with a young son to brighten my day. I took time off from my high school teaching job but that didn't help. I saw a psychologist who helped me sort through these issues but it was a lot to take in a short period of time. Ultimately, I never returned to Barnstable High School after the 2009 academic year. I was lost, and didn't know what to do with myself. Looking back, it was difficult for me to think straight during those tumultuous times. I had based my professional career, even most of my curriculum, around this study.

Determined to fight this, I looked to colleagues who advised me how to appeal the decision because there was no formal process contained within the permit denial informing an applicant how to contest a denial. Following advice from Eric and a couple other people, I filed a prompt written appeal within two days in March of 2009. When writing the plea, it occurred to me how lopsided it was to be writing this to an agency where no arbitration or separate appeals process was actually available. I was literally sending a letter back to Rob Deblinger and Tom French so they could read it and have Wayne MacCullum give them the go-ahead to deny my research again. They were literally judge, jury, and executioner and they knew it. In other words, they had unilateral power to do, or say, what they wanted.

So not surprisingly, in April 2009 I received a letter back from MassWildlife in which they "held their decision" and denied me a permit for the same reasons discussed in the March 2009 meeting and the original letter from MacCullum. As painful as it is to think back 11 years from this deliberate obstruction from these three state employees, it was useful – to this day – to have it all on paper so the world can read how ridiculously "rigged the system is", as Brooks Fahy would again remind me. This was the Iron Triangle and the MassWildlife mafia at its best.

Legislative Aide and University Support to the Rescue?

Upon the advice of my psychologist, on May 26, 2009, I went to the Dennis Village Green for an open roundtable with then Governor Deval Patrick. He spoke to the audience in a nice, down to earth way, and I was able with talk to him in person at the very end. I gave him a folder of information on my research and mentioned the issues I was having with MassWildlife. I remember him distinctly saying, "Yeah, I've heard that they are completely biased to hunting." Unfortunately, but not to my surprise, I never heard back from him or his aides despite a request. And he never did anything to better wildlife management when he was in office. As my apolitical, libertarian friend said to me at the time when referring to the previous Governor, "He's a Republican in sheep's clothing."

When left alone, eastern coyotes establish territories and keep other non-family members out of their domain, effectively regulating their own numbers. Lost in the politics associated with carnivore management, is that not hunting coyotes and other carnivores can actually help stabilize populations at natural densities for the betterment of humans and wildlife.

But the attempt to have a state employee help my cause didn't end there. During summer 2009, and again on the recommendation of colleagues, I sought out and found a great local state representative, Matt Patrick from Falmouth, as my next step to try and revive my career. Matt became a true friend, and helped me greatly during this difficult time. I explained that the claims of 'non-compliance' were cherry-picked to make me appear like a criminal and unwilling to work within the system. He even called Eric Strauss who explained to Matt how the state quite clearly didn't like my website and personal views and were making me pay for it. I had worked under Eric for well over 10 years and he knew I conducted scientifically sound research and this was 100% political, as Tom O'Shea at MassWildlife also indicated to both of us.

Patrick contacted Rob Deblinger shortly after I met with him and questioned the denial of the permit. To summarize, the local Representative characterized the process as unjust and ridiculous. Yet even he could not make them budge. MassWildlife insisted that my university affiliation was terminated and I needed a new one to continue my research. Plus, I know that the state hated that I went 'behind their backs' and contacted a state representative. They are a handshake type of people, which I can appreciate, but the hypocrisy is palpable since hunters always contact them whenever someone like me threatens any type of hunting. In fact, multiple people told me that MacCullum commented that locals (i.e., hunters) complained about my work and that was a major reason for denying me research permits.

The state's insistence on university affiliation as a threshold to a permit created an impassable barrier at the time and made no sense since I always collaborated with a local veterinary hospital, Hyannis Animal Hospital, and rehabilitation clinic, Cape Wildlife Center, and was myself a Ph.D-level scientist actively pursuing research. Furthermore, the two institutions I worked with provided the necessary professional services to assist in the safe sedation, handling, radio-collaring, and release of every study subject. I experienced a great level of frustration because as a researcher and doctoral graduate I was being held to a different standard, supposedly designed to ensure safety for the public and the subject animals. But clearly the standard as applied to me was designed specifically to hinder research. Conversely, hunters could easily obtain permits to kill and maim 'coyotes' for nearly half the year with the agency's blessing right within the Town of Barnstable including using bait and all manner of other techniques to kill them. Dan Horn, and the Town of Barnstable, did nothing to stop anyone from using similar techniques to my research, but to kill coyotes.

Curiously, there were two separate instances that fall when I noticed Charlie Lewis parked outside my house in his town Animal Control white van. I never went out to question what he was doing, for fear that I might do something stupid in an encounter with a Barnstable employee but it seemed that he was looking to the side of my house where I kept my traps. I had always wondered if the state put him up to keeping tabs on what I was up to, but I didn't have the mental capacity to calmly confront him at the time to find out.

In an effort to move forward, I asked my former Master's advisor, Dr. Morty Ortega, for university affiliation as a research biologist in Fall 2009 at the University of Connecticut Storrs (UConn). They complied. I became excited again as this would get my career back on track. As this email communication indicates, I quite clearly was in the final stages of obtaining full university approval in December 2009. I informed Tom O'Shea that I nearly had the new protocol approved and that I would appreciate it if he could expediate the permits given all that had happened. Naturally, I kept Matt Patrick updated on my status.

You can probably imagine my shock, however, when shortly after my contact with Tom O'Shea, after informing them that I had satisfied the university affiliation requirement, UConn rescinded their decision to give me the research protocol. The abrupt termination of the research protocol following my contact with the Department raised serious suspicions of interference. A close colleague of mine told me that it seemed highly likely that someone at the top of MassWildlife had contacted the university to disparage me and my work. Based on information in the next chapter, it seems pretty obvious that either Tom French or Wayne MacCullum called UConn. It only makes sense.

Without the IACUC (Institutional Animal Care Use) protocol, as it's called, Matt Patrick could not help me, even though some lawyers I spoke with advised me that it was questionably legal to require an IACUC in the first place – especially since I have a Ph.D. degree related to the research taking place and work with trained veterinarians. But the 'Terrible Trio' were destined to obstruct my work as far as they could take it. My criticism of the agency was personal and there was no room for a dissident within their authoritative circle.

Soon after the failed attempt to obtain affiliation, I next tried working with a lawyer colleague to reach the Governor, even though he did nothing after that May 2009 meeting in Dennis. We indicated that we intended to sue the state for hindering my research and career but we could not overcome the university affiliation 'threshold' requirement, especially after UConn mysteriously withdrew their support in December 2009. No one from the school would return my calls and it was the last time I would speak with Morty Ortega. Clearly something happened and to me it was painfully obvious: MassWildlife interfered with the IACUC process and had UConn reverse course. They no doubt either warned them that they would influence the university in other matters or more likely disparaged me and made me sound like a criminal to get them to back off.

Unfortunately, it would have been exceedingly expensive and an uncertain outcome if I followed through with this legal process. And it would have been a "she said" versus "he said" argument and a judge would likely side with a state agency every time. So, here I was, spending my time contacting lawyers rather than focusing on important research on the eastern coyote. French and MacCullum were professional obstructers; they knew exactly what to do.

I'm sure one can imagine my reaction every time I receive a letter in the mail asking for a donation to support UConn when they abandoned me during a time of critical need. Little did most realize, possibly including the state, that this trail of retribution would last for another decade. I went into a deep depression after this latest betrayal by the Terrible Trio.

Coywolves are naturally curious animals such as these animals looking at a sibling (*Left*) and carrying a bone *(Right).*

Chapter 12: Moving On

Within a short period of time, I became toxic. MassWildlife not only was blackballing me, but they were clearly affecting my relationship with institutions and people I formerly called friends. Eric Strauss would soon leave Boston College and head out to Loyola Marymount in Los Angeles in 2010. It was clear that his new school questioned why he would want to stay involved in this mess when he could start fresh in a new, more progressive region of the country with exciting projects unrelated to coyotes. In early 2010, I had helped him in his application process to the school by giving him materials, such as my PowerPoint talks, to help him get hired. However, after he received the job offer and was in the process of moving out west, he stopped returning my emails and phone calls. After a couple of years of occasionally trying to contact him, I gave up and accepted that he was dead to me too. His help at that point could have been a game changer in my uphill battle against the state. Our mutual friend, Pete Auger, followed him to California so that naturally terminated our relationship too.

Chasing My Tail

The next two years (2010–2012) proved to be just as frustrating and depressing. Without university IACUC support, I could not conduct critical research on the radio collared study subjects. All of the batteries of my remaining radio-collared animals were wearing out at the end of this period, so I could no longer track them. Without the permits, I could not recapture and replace their collars. In October 2012, I had to make the painful decision to suspend the "Outings" part of my business as I had no animals to radio-track, which was the crux of my business.

I spent over a year after the UConn fiasco transpired trying to figure out what to do. My mood would vacillate between sadness and anger over what had transpired over the previous couple of years. One evening, I gave a talk on coyotes at Tufts University, at the Center for Animals and Public Policy. Folks there knew me well as I had spoken there numerous times previously. After the talk, and in subsequent weeks, I courted them to take me on as an 'Adjunct Research Scientist', similar to my previous post at UConn.

Fortunately, they agreed and I gained affiliation with Tufts University in 2011. They understood all too well about the state and their bias toward research so that helped my situation. I worked with the Center for over a year and had a nice proposal written to send for IACUC approval, but for some reason, and I actually think this was unrelated to the state, they never helped me push it over the finish line. Without an IACUC, I could not conduct research. It is a mystery as to what happened there. And, to this day, it is difficult for me to talk with anyone affiliated with that program knowing what could have been if I just got that IACUC letter and they were serious in supporting my research. It would have jump-started my career again.

Another year went by with no action. I was currently early in my tenure as a ranger at Cape Cod National Seashore, where I worked 5.5 months a year, just under the six months that would require the government to give me benefits. That gave me significant amounts of time to focus on research. With the help of a compassionate animal-friendly friend, Bob Goldman of Maine, we spent months in 2012 reaching out to environmental lawyers that might have more specialization in this type of case. We ended up finding a very promising one who knew that the charges were clearly exaggerated to discourage anyone from working with me, but he understandably wanted me to have IACUC support first as that 'threshold' permit condition before intervening. It was a catch-22 scenario as the IACUC would help me with a lawyer's support, but a university had to give me one before a lawyer would help. And it was not known if an institution would want outside counsel involved once I was working at their institution. So, it was back to the drawing board in terms of finding university support.

I became disillusioned during this time about government in general, and specifically with the hypocrisy of certain levels within it that wanted minimal interference in their operations but went out of their way to provide maximal obstruction when someone worked against their goals. It became painfully obvious that state fish and game departments were going to continue to cater to their hunting constituents for maximum resource utilization, despite a tiny minority participating in such activities and public complaining about how wildlife, and carnivores specifically, are treated.

This female coywolf displays many of the characteristics of its red/eastern wolf kin. This makes sense since they share many of the same genes.

The Big Break, or Not

In 2013, I finally got the break that I needed when I was appointed as an unpaid research scientist at Clark University in central MA. Dr. Bill Lynn, the well-known ethicist colleague of mine who I mentioned in the Genetics chapter, was a research scientist there as well and put in a good word for me. Clark was interested in my work, and I rapidly received IACUC protocols from them in October 2013 after just a couple of months. In moving through the IACUC process, I initially didn't inform anyone except a few close friends of my affiliation with this university out of fear of having my relationship with the University interfered with again by the Terrible Trio. At the time, it was a wise move because no one at the state had any idea about it. When the IACUC protocol was approved, I immediately sent in the permit request to Rob Deblinger at MassWildlife, yet I initially received no response. Then, a week or so later, I sent him another email to make sure he obtained the first one, and finally received acknowledgement of receipt.

For the next six months, however, MassWildlife sat on the permit request. I think they were shocked, and possibly angry, that I figured out a way to get an IACUC protocol 'behind their backs'. They probably assumed that I would have broadcasted it on my website or to other colleagues who might notify them. But I didn't. I said nothing until the day I received it. For once, they couldn't use their smear campaign against me, I thought.

Nonetheless, Rob Deblinger, Tom French, and Wayne MacCullum did what they do best and sat back and delayed their decision. They could have literally just spent an hour of their government time and written a permit then e-mailed me it so I could begin my research career again. I couldn't speak with Tom O'Shea to inquire about the permit process because he had recently left the department, supposedly for a higher paying job, but he had a 2-year gag order where he couldn't speak to the public about why he left. I honestly don't know why a public employee would have such a directive, but it didn't surprise me about MassWildlife. They are a secretive, public institution with unilateral powers. At this point, Matt Patrick was no longer a state representative so he had no leverage to assist me. I am convinced that the state knew this too. I had contact with a couple of lawyers, who were willing to help me pro bono, but Clark University requested that I let them handle the process, and I complied. I sat back and just waited, and waited.

In February-March, my colleagues at Clark contacted and then met in person with Tom French and another man whom I had never met. Dr. Rob Johnston, Director of the Marsh Institute, and Dr. Lynn inquired why the permits had not yet been issued. I requested a transcript of the meeting and Clark officials told me that the state raised the same old "non-compliance" issues that we thought had already been resolved multiple times. However, I was ready for the state this time and explained everything in detail to Clark University prior to the meeting. Their personal attention to my research was so appreciative. They knew I had been wronged and wanted to make it right. They were true friends.

Because of their knowledge of the situation, Clark was able to easily refute everything that French brought up against me, explaining that all of those petty grievances were already covered by me and my state representative way back in 2009. And they had evidence to prove it including prior permits that had been issued me as well as letters from other scientists supporting my work. The grievances were minor and could easily have been resolved. Clark officials essentially asked them to bury the hatchet and start fresh with me. After all, I was at a new institution four years after everything initially went down and vowed to focus on my research. And I meant it. But, it was clear that Tom French had no intention of providing permits. He let the Clark representatives know quite authoritatively that they had broad discretion to do what they wanted, which I was definitely beginning to believe. He repeatedly brought up my website again and questioned specific things on it such as my comment on 'science-based wildlife management' not being true and me linking the hunting of coyotes to hate and possibly racism. I was informed that French was flabbergasted when the Clark folks noted that many of my comments were in fact based on the truth.

Equally as troubling, I learned that the state also had no plans of ever allowing me to create something that I have dreamed, and written, about for years: An Eastern Coyote/ Coywolf Discovery Center based on the model of the world famous International Wolf Center in Ely MN. I planned on using outdoor captive animals as ambassadors and study subjects with a museum-like education center inside. Dr. French specifically told my colleagues that they would never permit this despite me having two graduate degrees on the topic and having previously hand-raised coywolves. By now, the words that described the process of deliberate interference in John Theberg's book *Wolf Country* were becoming frightening realities as my career stagnated, and my career goal of the Discovery Center was being categorically denied for no good reason.

If eastern coyotes could talk, I often wonder if they think “With friends like this, who needs enemies?”, when thinking about wildlife agencies that are hell-bent on allowing a small, vocal minority to kill unlimited numbers of these animals for no justified reason other than for fun, sport, or ‘tradition’.

The level of hypocrisy, corruption, and deliberate attempts within MassWildlife to thwart my research and my career continued to take me by surprise. Under Department regulations, hunters are allowed to kill 'coyotes' with few restrictions for half the year. Hunters are seen as true partners to MassWildlife since they supposedly pay their salaries, although, as explained earlier, that is only partially true. Yet, as a widely published scientist who has dedicated his career to the study of a local species, I could not obtain research permits or work toward a potentially economically beneficial tourism drawing project like the Eastern Coyote Discovery Center even though I work with professional staff to ensure the handling of the study animals using the most modern, professional, and safe techniques. In direct contrast, the agency allows Mission Wolf to bring wolves to Cape Cod for display and every year King Richard's Faire brings in captive large cats including exotic tigers and 'ligers' to southeastern MA.

Permits Denied even with University Support

In April 2014, while in the middle of working one of my seasonal half-year stints as a ranger at Cape Cod National Seashore, I received the news that my permit request was denied again. The letter once again came from Wayne MacCullum who never took the opportunity to meet with me. The iron triangle was in play once again, and this time the discrimination was transparent and obvious. MassWildlife denied the permits even though I complied completely with their request for university affiliation and secured a local veterinarian to work with. To the astonishment of my close colleagues, the state continued to cite old "violations" that had been addressed previously (in 2009 and numerous times thereafter) and included additional supposed "violations" that were patently false. Included in the list of new violations were transgressions supposedly committed in a part of Barnstable, Sandy Neck Beach, that I had neither worked in nor visited for 7-8 years at that point. It was obvious that Tom French or Wayne MacCullum had contacted the Town of Barnstable and spoke to Dan Horn, and they worked together to come up with anything they could against me. There was nothing specific to what I had even done on Sandy Neck Beach, which isn't surprising since I hadn't been there for so long. Again, having a chain of personnel, from the Town of Barnstable cronies to MassWildlife staff to the Director of MassWildlife, in their web of lies gave everyone plausible deniability in this ring of corruption.

While MassWildlife has denied my plans to build an Eastern Coyote/Coywolf Discovery Center, including captive eastern coyotes, they annually allow King Richard's Faire in southeastern Massachusetts to display large cats including this huge liger, a lion/tiger cross, the biggest of all cats (*Note*: I took these photos during visits to the Faire).

The hypocrisy of allowing large, exotic cats in Massachusetts but denying a researcher who obtained his Ph.D. in wildlife biology and has openly said he wants to dedicate his life to studying an animal actually living in the region is utterly astounding.

In seeking out the reasons for the denial, I already knew from requesting transcripts of the meeting with Clark University that Tom French spoke very negatively of me. Despite my professional publications, he challenged the validity of my research including the type of journals I was publishing in and my questionable use of the term 'coywolf'. Disturbingly, French said that they had the power to rescind any research permit(s) they might issue at any time for any reason including if they simply didn't "like or approve" of my activities, including posts on my personal website. Unfortunately, even though my colleagues were flabbergasted by the rejection letter, they also noted that the university was also fearful of the potential fallout from MassWildlife. The state could pull other permitted projects unrelated to my own. I knew where this was headed before it happened.

Soon after the rejection letter was sent, Tom French continued the smear campaign by talking with Philip Bergmann, one of the two IACUC members at Clark University. It was very obvious that French complained about my work and my character and told Philip that I was a problem that they shouldn't support. I can only imagine what was actually said to discredit me but, perhaps not surprisingly, about two months after the permit re-rejection by the state, Clark withdrew their IACUC support. This followed directly after Clark University's conversation with French. Ever since that point in time, my affiliation with them has been a paper tiger. In August 2016, my relationship with Clark effectively concluded, even though I continue to receive emails from them.

Curiously, after that rejection letter from the state I started to receive *Massachusetts Wildlife* magazine issues. They publish a pretty little quarterly booklet in full color. It is impressive magazine for a limited staff that writes it. I wrote in an issue back at the beginning of my research in 1998 so I know a little about it. However, in 2014, I never paid for it, and it didn't take me long to hypothesize that they purposely sent copies to me either to rub in the cool research taking place in the state or to try and bait me into posting something on my website to call them out. I said nothing, hoping that I would be able to obtain outside support to fight them. However, I recently looked at my 4 issues from 2014 in my library and shake my head of why they are mysteriously there, and then why they stopped coming afterward.

I also think back to late 2009 with all of this information. It is now pretty obvious that Tom French was the one who contacted UConn officials to discredit me. He now had years of practice and could lay it on heavy with how bad a person and researcher I was, even though I've never had a real conversation with him before besides meeting with him twice with other staff. But that is the point. I go back to the Forward of this book and think back to the movie *Just Mercy* and how unaccountable government employees have free reign to do what they want and are able to ruin other people's lives at their discretion while continuing their government jobs.

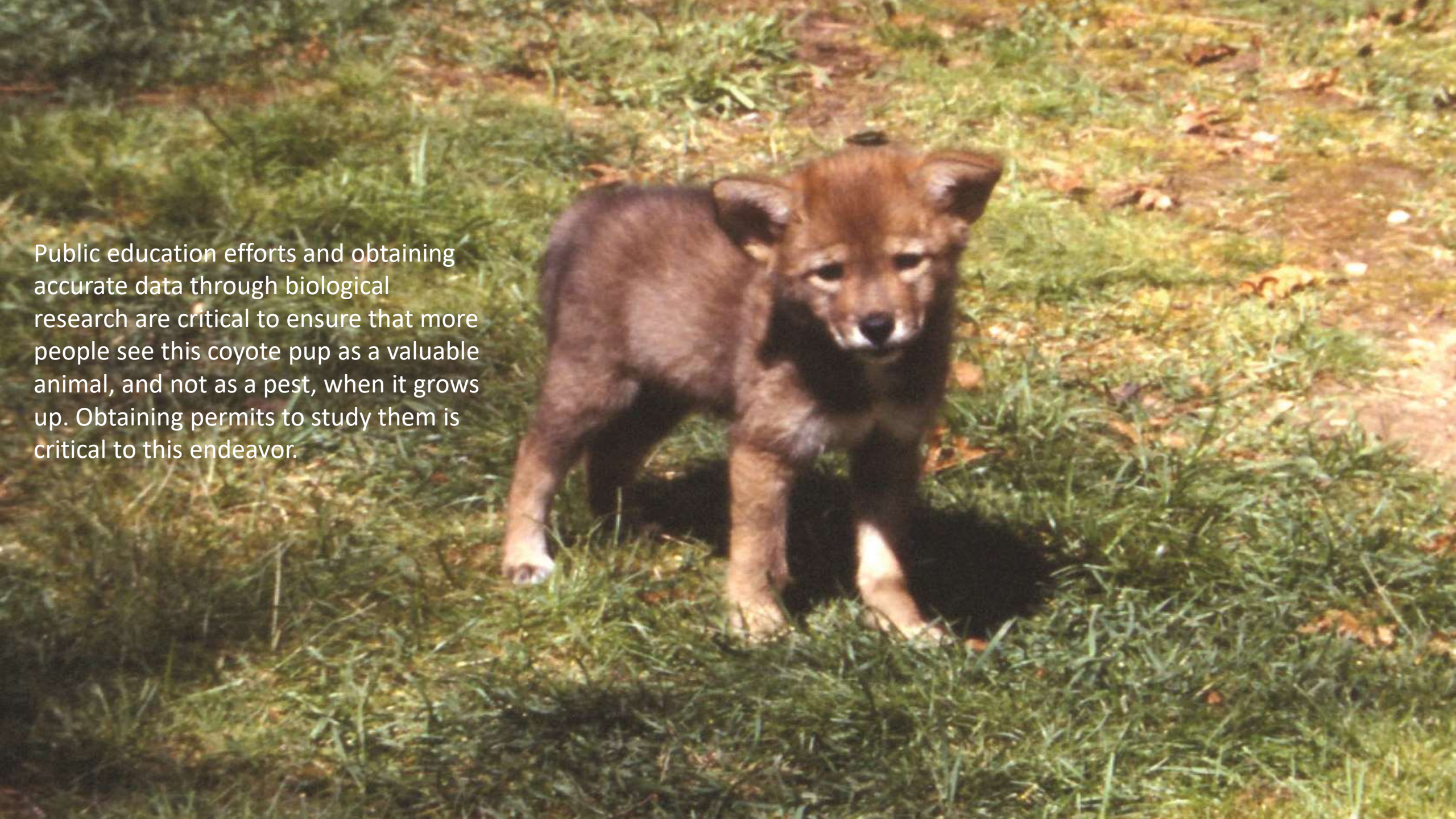
But wait, the fun doesn't end here. There is more to come from the Terrible Trio.

Strip Club Science

As if to underscore the corruption in the department, I learned shortly after the state reviewed my permit request that in Fall 2014 Dr. Deblinger was under investigation as he had been the subject of an undercover sting operation. Recall that he helped in the process of denying my work, starting in 2009, and to whom I submitted my permit request in October 2013.

In a Fox news report, the Deputy was frequenting strip clubs in Rhode Island during work hours. He arrived for work in a MassWildlife vehicle and went to the clubs during the day, including drinking alcohol, then left when it was time to check out at MassWildlife at the close of business, all the while using state owned vehicles and receiving state-earned money for time 'worked'. I learned later that he resigned shortly after the story became public and before being fired. Word was that he received half of his $106,000 salary per year as a pension. No further investigation, to my knowledge, was conducted. I wanted to vomit when I heard Wayne MacCullum interviewed for the story completely unaware that his #2 in charge was doing this.

It remains unclear how long Deblinger was going to Rhode Island during work hours, and if he was doing that while they sat on my research permit for over half a year during this timeframe. But the timeline aligns quite smoothly for him to have been getting state-paid lap dances while I was sitting around my house waiting to resume my research. You can't make these things up! And, imagine, he was the least worst of the Terrible Trio for destroying my career.



Public education efforts and obtaining accurate data through biological research are critical to ensure that more people see this coyote pup as a valuable animal, and not as a pest, when it grows up. Obtaining permits to study them is critical to this endeavor.

Re-seeking Lawyer and State Representative Support

Most people would have given up by now and moved to a new area or found a new vocation. I am not normal so I decided to fight back. This was personal. Keep in mind it was just after the Great Recession during a terrible job economy, where environmental – especially wildlife – jobs were hit disproportionally hard. In mid-April 2014, I contacted an aide from the MA Senate President's Office hoping to get assistance in obtaining the permits "quietly" without creating issues for me or Clark. When nothing was accomplished, I then spoke with Brooks Fahy of Predator Defense. In mid-July 2014, Brooks sent a letter to the Senate President requesting a formal investigation be conducted on MassWildlife. In the letter, Mr. Fahy outlined the problems I experienced as well as the resignation of the deputy director and the impact that the denial of permits was having on my career and research.

Despite the request to prominent Cape Cod politicians throughout summer and fall 2014, and intermittently since then, my case was falling through the cracks. Senator Murray was retiring and clearly this case wasn't worth taking on during her swan song. Representative Matt Patrick was truly the only politician that fought for the common man, until Senator Julian Cyr came onto the scene in 2016. (As discussed in other sections, Senator Cyr contacted MassWildlife, which helped facilitate the hearings that led to the banning of hunting contests; he has also had initial conversations with the agency in 2019 about what happened to me and my research career.)

After fruitlessly waiting through fall 2014 for something to happen, I re-contacted my environmental lawyer friend. The process was difficult and impeded any lawyer from helping me because MassWildlife has inconsistent cryptic 'policies' that make it difficult to prove obstruction or blackballing. For example, the lack of an appeals process makes it very daunting for lawyers or for state representatives to prove direct bias, especially when one has to appeal to the same people denying the research. The agency creates such long bureaucratic paper trails that it is hard to follow unless one delves deeply into the issue (and hence the five chapters on this topic in this book).

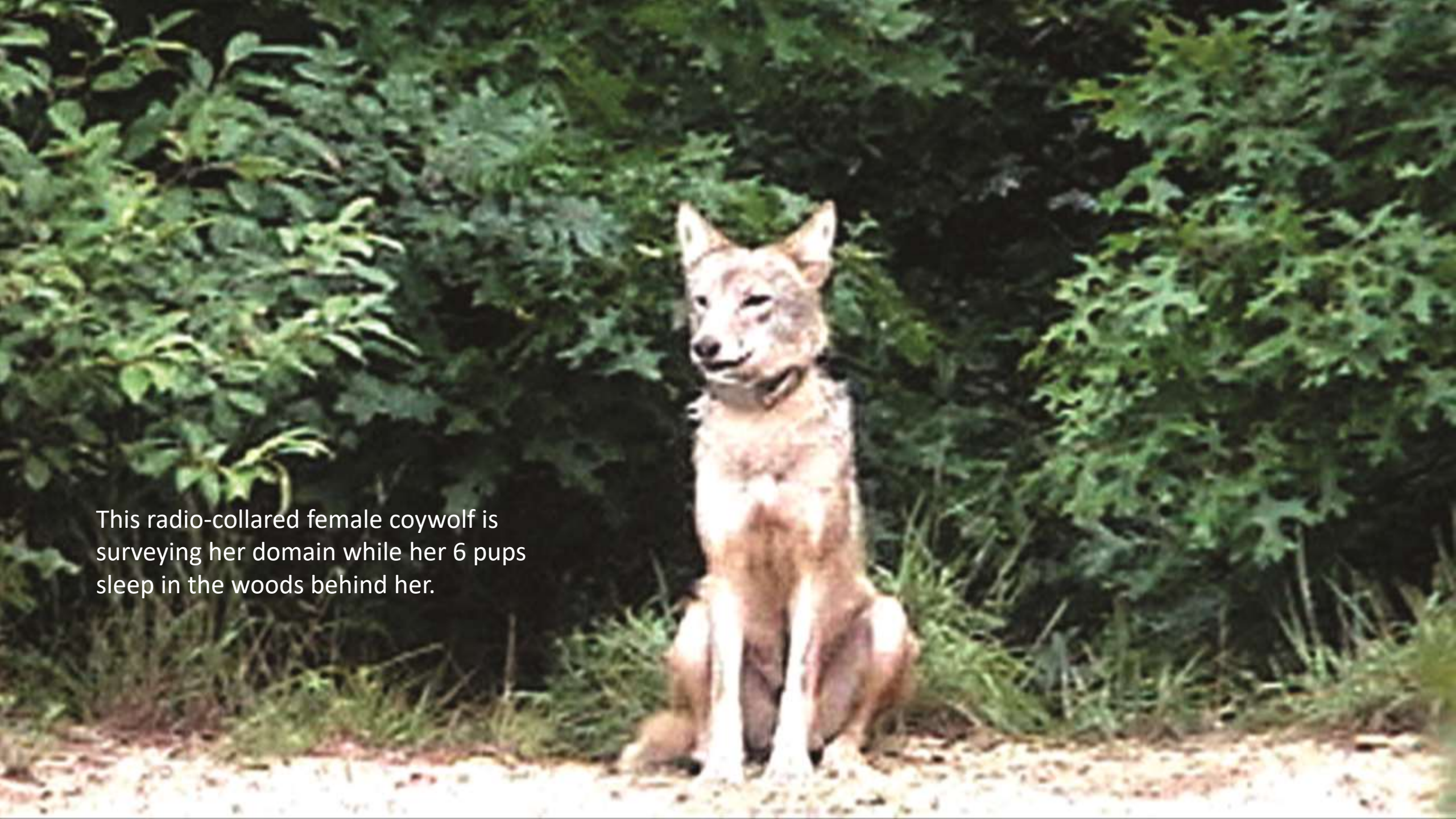
That year plus of effort led me to summer 2016, when I became frustrated with the process and decided to write the *Testimonial* to explain what had happened to me. As stated at the beginning of Chapter 10, a juxtaposition of events prevented real political changes from happening after I wrote that account. A detailed story wasn't written on this, and no legal recourse could be taken. However, scores of people read the *Testimonial* and started to realize how corrupt and special interest focused MassWildlife is. As detailed in Chapter 9, the new staff at MassWildlife bore the brunt of that criticism at the 7 hearings that they held in 2019 to ban hunting contests on furbearers.

I am still searching for a lawyer, politician, or maybe even an investigative journalist to look into my seemingly hopeless situation. Publishing this book is important to set the record straight and gather a large group of angry citizens who can demand change. My collaboration with PEER (see Chapters 9 and 13) has certainly underscored the importance of the public in demanding and initiating change.

Meanwhile, I am still denied the opportunity to conduct research on eastern coyotes, the social, intelligent, family-oriented species that are the victims of deliberate persecution through a half-year long unlimited hunting season in MA. It is clear that these policies deserve to be reexamined in light of my research and that of other carnivore scientists.

As far as I'm concerned, even though I know this will never happen, I strongly believe that Rob Deblinger, Tom French, and Wayne MacCullum should go to jail for such of an obvious abuse of power, and their subsequent defamation of my character. For sure, they knew exactly what they were doing throughout this process. Especially French and MacCullum. These are classic techniques that have been used to disenfranchise people (and entire races) since this country's inception. They will no doubt use the BS plausible deniability clause via the Iron Triangle strategy to wiggle their way out of the questioning that is hopefully forthcoming from this publication, but at least they will have to speak about it. Hopefully. Many have thought that I should be eligible for financial compensation for this true-life nightmare but in order for that to happen, there has to be relentless public pressure for the state to do the right thing and admit there was wrongdoing involved.

As I'll document in the next chapter, French and MacCullum were able to take a few more jabs at my career before retiring in the later part of the decade.



This radio-collared female coywolf is surveying her domain while her 6 pups sleep in the woods behind her.

The resemblance of eastern coyotes to wolves is striking, and is a major reason why the ‘coywolf’ term is catching on with so many people.

Chapter 13: On Redirecting Policy

In 2015, I wrote a review on *Wolves on the Hunt*, an amazing book documenting how wolves hunt in the wild. In that review, I noted how national parks played a critical, underlying role throughout the book. In fact, Superior National Forest in northeastern Minnesota and some remote areas of Canada and Alaska were about the only major exceptions. Without Isle Royale, Yellowstone, and Denali National Parks in the United States, and Wood Buffalo National Park in Canada, much of *Wolves on the Hunt* would be incomplete. There are a few reasons for this: (1) scientists can generally study wildlife with less political interference in national parks than in most areas; (2) wildlife lives mostly undisturbed in these areas making them ideal study sites for researchers; (3) there is more infrastructure conducive to studying predator-prey interactions including departments set up for studying these systems, and money for equipment and researchers' salaries; and (4) the intense public interest in national parks makes them an ideal place where results will be picked up not only by scientific outlets (e.g., journals), but also by newspaper reporters, magazines, books, TV newscasts, and nature documentaries. This often feeds into increased funding, which is typified in Yellowstone where a large percentage of the Wolf Project is funded by private donors.

Being from the Northeast U.S., I am disappointed with the relative lack of national parks in this area (although see my related book to change that), as well as the comparable lack of infrastructure, at least as of now, to support such studies (say of eastern coyotes and white-tailed deer). The stranglehold that MassWildlife holds on to wildlife policy extends well beyond town and state lands that they administer and has consequences even in places like our national parks in Massachusetts, areas that are intended to be left preserved unimpaired for future generations, as well as National Wildlife Refuges, and even within Non-Governmental Organizations. It is important to elaborate on these entities to show the depth and breadth that MassWildlife is able to influence. Massachusetts is not any different, however, as all wildlife agencies, if given the chance, would advocate for hunting within national parks and other supposedly protected areas within their jurisdiction.


Eastern Coyote/Coywolf scent marking: This animal is a unique canid living in the Northeast that has virtually no legal protection throughout its range including within Cape Cod National Seashore where this one was photographed.

Cape Cod National Seashore

Cape Cod National Seashore, at ~45,000 acres, is nearly the size of Acadia National Park, making it one of the largest national park units in the Northeast. When it was created in 1961, a concession was made to allow – but not mandate – traditional hunting, which was outlined as for deer, turkey and other commonly eaten species. Back then, hunting seasons were very short; about a week or two a year. Given the nature and mandates of national parks, it would be a reasonable expectation that non-traditional hunting would be excluded, such as hunting for sport for species that are not eaten, like carnivores. And that shorter (say, 1 week) hunting seasons for species like deer, rabbits, and a few gamebirds like ducks would prevail. That would allow the "traditional" use of hunting, but give precedence to providing adequate protections for humans and wildlife and also respect the spirit and intent of national parks to 'preserve resources unimpaired for future generations'.

But Cape Cod National Seashore follows most of the MassWildlife hunting laws and currently allows for a 3 month deer season – the longest since colonial times, 4 months of fox, nearly 6 months of "coyote" hunting, and many other unjustified hunting seasons, including a legal bear hunting season even though there are no populations within a hundred miles. A spring wild turkey hunting season is 3 of 4 weeks in May, pushing right up to the peak of the tourist season starting Memorial Day weekend. A friend at the Seashore informed me that MassWildlife called and complained to the Seashore when they *only* allowed 3 of the 4 weeks of spring turkey hunting.

Petitioning the National Park Service to Protect and Study Carnivores

Through my research I have come to appreciate the necessity for refuges from hunting. As such, and even though I was an employee in the park from 2010-2017, I signed a petition in December 2014 which was sent to George Price, Superintendent of Cape Cod National Seashore at the time. It sought to ban unnecessary carnivore hunting in the park. Hundreds of people signed it including top carnivore scientists in the nation, as well as dozens of local people. The petition outlined many important factors that should be driving a ban including the ecological importance of carnivores, that hunting carnivores was never a traditional activity, and that wildlife is a public trust resource owned by all citizens – not just hunters. If a national park like Cape Cod National Seashore allows carnivore hunting, the petition reasoned, then where can wildlife live unharmed where people can enjoy undisturbed wildlife watching? For perspective, carnivore persecution was stopped in Yellowstone and Denali National Parks in the 1930s and 1940s, respectively.

In February 2015, Brooks Fahy of Predator Defense received a response from the Seashore indicating that they had reviewed the petition but that the enabling legislation contained provisions for hunting. They did not, however, address our complaint that the EIS (Environmental Impact Statement) specifically referred to traditional hunting and that it also stated that carnivore hunting was not a traditional activity. There was no valid reason to ignore the petition, unless of course the state contacted them and complained. They have a Memorandum of Understanding that has the Seashore communicate with MassWildlife on anything wildlife related. You can imagine the bias that causes.

The Seashore's response also stated that they did not find a reason to end carnivore hunting in the national park and were unaware of any management issues associated with the practice since 'carnivores appeared abundant in the park.' This finding was contrary to the concerns in the petition that was signed by many of the nation's top independent carnivore and wildlife specialists, and was interesting because no one has ever collected any data on carnivores inhabiting the Seashore so the park (and state) has no actual data on which to base their claim.

I had always aspired to be a full-time biologist at the Seashore and thought it would be a great place to continue my eastern coyote research so I tried to keep quiet how frustrating it was to see the national park service ignore my potential as a biologist and force me to fit into an established part-time ranger position. In November 2013, there were issues with coyotes getting too close to people at Herring Cove Beach in Provincetown. Knowing my research, some of the full-time employees asked if the administration at headquarters had contacted me about the situation. I was still working in the park during one of the instances and I would've loved to use my professional training to do some good on the 'coyote situation'. When I said no, they looked at me and said, "actually that doesn't surprise me". Unfortunately, even though national parks are world famous and very popular with the public, it is toward the bottom of best places to work in the government. There is something majorly wrong when both of these scenarios are the case.

Curious to the coywolf situation, I drove to Herring Cove Beach one evening after work and spent a brisk dusk there in mid-November. While no eastern coyotes showed up that night, a man from Truro parked in the beach lot and walked across the street and up a hill to hunt them. He said they were all over the place and he had to control them. While I never heard a gun-shot that night, I did listen to the man playing an electronic recording of an injured animal all evening. Fortunately, no animals were lured in to the sound while I was there. I drove home furious knowing that man's actions were legal in one of our only natural, large national parks in the Northeast.

Sign posted on Herring Cove Beach, Provincetown, MA, with a view to the west at dusk.

Wild eastern coyote/coywolf pack scent-marking (*Top Left*) and traveling (*Bottom Right*), while a lone pup (*Top Middle*) and an adult (*Top Right*) are captured on trail-cameras. Amazingly, the National Park Service – in consultation with MassWildlife – ignored a petition by 8,200 people to better protect Cape Cod National Seashore and to eliminate carnivore hunting.

Permits to Study Carnivores go by the Wayside

I had been in touch regularly with the natural resource staff. Much of their division goes to monitoring endangered shorebirds, such as the piping plover, so they don't have anyone monitoring mammals there, especially after Dr. Bob Cook retired in 2016-17. They knew I was interested in doing research there so in spring-summer 2015 I wrote a proposal and received approval from the national headquarters of the National Park Service (NPS) to conduct a 3-year coyote/carnivore study at the Seashore. Similar to my situation at Clark University, I was very quiet during the process knowing that MassWildlife would go out of their way to try and terminate this study in its tracks if they found out.

Excited about this opportunity, I presented the permit to upper Seashore officials during my fall 2015 assignment. I was giddy for the first month or so of work knowing that I might be soon studying carnivores within the national park. However, after a couple of weeks went by without acknowledging the permits in hand, it quickly became painfully obvious that they took absolutely no interest in monitoring carnivores, even after the 2014 petition signed by hundreds of people requested them to do just that. It even generated much press exposure but that didn't move on funding a study.

The Seashore was over 30 miles from my house so it was impractical for me to do the project without dedicated funding as there was no way I could work a different job to survive and still conduct the research, even though I had done that for years at my Barnstable study site. Because I did not have any direct funding to conduct the investigation, the folks at NPS headquarters kindly let me defer the permits until I was ready to start. Nearly five years later, I have yet to initiate that study.

A couple of frustrating years went by, and no action took place on the 2014 petition or my potential research. It was like dealing with MassWildlife all over again. It frustrated local activists, like Louise Kane, who saw how much good the study could do. She even voiced that to the press. I met with her a few times and told her how upsetting it was for the Seashore to also 'not be able to see beyond their immediate shadows' on a project that could become nationally known. In fact, they went out of their way to point out how many groups of species aren't researched in national parks. While technically true, since the NPS doesn't have a large budget, it was like they were going out of their way to prevent a study from taking place with broad public interest, especially since there has been no research on carnivores by the park service in a coastal region of the Northeast. It was obvious that the current managers of the park had no interest in better understanding an ecologically important group of mammals within their jurisdiction.

The coywolf comes in a variety of colors including this red individual photographed in a salt marsh. Photo by Shawn Carey.

Sharing an E-mail gets me Terminated

In 2017, Louise stepped up and wrote a petition that almost 8,200 people quickly signed that supported treating the Seashore like a national park and hiring me as carnivore biologist. I had always been ready to work in a full-time capacity with NPS, as their ideology of preserving nature unimpaired fits with mine. Plus, I went out of my way, on my own time, to secure research permits to study eastern coyotes and other carnivores living within the park. I figured after over 7 years of working there that would mean something to upper park management. I also appreciated the vast public support for such an endeavor. So, when Louise submitted the petition, I forwarded it to a couple of my colleagues at the Seashore through my personal email, obviously excited about this opportunity. I guess I was still naïve to wildlife management processes, even in national parks.

The next week, after I returned from a 3-day conference in Germany where I was an invited guest speaker discussing eastern coyote hybridization, my supervisor in the ranger division sat me down and said that the petition created quite a commotion with upper management at headquarters. When I was away for the 5-day trip, the Seashore was contacted by MassWildlife. Apparently, the state was angry that 8,200 signed a petition to treat federal land as it was intended, and to support my research. My supervisor said that the caller complained about the petition and hoped the Seashore would ignore it despite thousands of people signing it. Given that Tom French worked for MassWildlife until 2019, it seems most likely that he was the one who called, which is ironic, because in his retirement article, he is quoted as saying, "It was a reminder to all of us here that science doesn't always prevail (when discussing rattlesnakes)." Yet, he had spent the better part of a decade obstructing my work and ruining my scientific career. As my close colleagues accurately predicted after the petition went out, "Get ready for the smear campaign, Jon".

After the 'uproar', Chief of Interpretation, Sue Moynihan, at park headquarters shared my short email to park personnel at the ethics division in Boston. I was absolutely befuddled that sending others a link to a petition from my personal email, which would better protect park resources, would work its way up NPS' ethics division. Moynihan shared both the petition as well as my website to see if my actions violated Seashore policy. These were clear pencil pushers who had no perspective of what was actually going on and were just following a rank and file order system. My supervisor had to explain to me how sharing a petition was not allowed at the Seashore. I felt like a 5-year-old being talked down to and my direct boss, put in an awkward position not by choice, knew it. I literally shook my head in front of her while she obeyed orders discussing the situation. We knew each other well and both understood why the NPS is rated so low in employee surveys. Nothing else needed to be said. The whole thing was another example of poor upper management supervision, and authoritarian rule in the NPS.

Over my career it has been rewarding to work with world famous wildlife biologists and know that even international scientists recognize my work with canids. I had a wonderful time at the wolf conference in Germany and enjoyed sharing my knowledge of canid hybridization in eastern North America. It has been said that it is very ironic (and sad) that I am well known and respected nationally and internationally yet infamous in my home town and state of Massachusetts. To be sure, the small mindedness that is often a part of local town politics is alive in well in Barnstable.

In the same year that this took place (2017), a nearly half-year hunting season took place in the park, with hunters legally allowed to kill the same animals in hunting contests (pre-2020) and able to use dogs to chase coyotes and other animals if actively engaged in hunting. Imagine that picture within a national park, while an elderly couple could get ticketed by a ranger in the same area for walking with a small dog breed off-leash, even if it was right next to them. Yet, an ethics case was filed against me literally for sharing a short e-mail, saying "You guys might be interested in this, here is the link". Only in Massachusetts, where a state hunting agency runs wildlife management activities in a national park, could this happen.

But it gets better.

I continued my ranger-led programs that spring and my supervisor commented at how professional I was after all that happened. I continued with all my activities and talks, developed a couple of new ones, and never missed a beat, nor let it affect me. It would be impossible for them, or anyone for that matter, to really understand just what I had gone through in the previous 8 years at that point.

Meanwhile, I was told that Moynihan went to Acting Superintendent Kathy Tevyaw without waiting to hear back from the NPS ethics officer about whether or not there was an actual conflict with my job and my role in the petition. While the officer determined there was not an ethics issue, Moynihan and Tevyaw determined that I was not worthy to be hired back the following season.

It seemed pretty clear that if my supervisor's supervisor had not pushed my position on predators, along with a newspaper article on the subject, I would have been rehired. The fact that the decision was made without waiting to hear from the ethics office, who actually advised Moynihan that I did nothing wrong, is telling.

It continues to befuddle me that the National Park Service allows these animals to be killed throughout Cape Cod National Seashore for nearly six months a year because MassWildlife says ‘their populations are doing fine’. However, nobody has ever collected data on coywolves within the Seashore and the permits I obtained to do such were essentially ignored by the park service.

My end date for the season was originally extended by 2 weeks to mid-July 2017 to help fill in gaps in the park's schedule, but the folks in Boston shortened it back to the original date I was supposed to finish, which was late June 2017, after the ethics 'complaint' by Moynihan was made. A few days before I was to be done in late June 2017, my supervisor gave me the notice that I would not be hired back. Kathy Tevyaw or Sue Moynihan, without ever meeting with me, determined that I was not welcomed back after 8 years of service. Following federal guidelines, my supervisor had to fill out a job performance evaluation, as is the case for all employees. Upper administration staff told her explicitly to deduct points from my rating for sharing that petition with staff. Even so, I received a 21-22 out of 25 which was bordering on an "outstanding" rating and was well above the 15 score threshold to get re-hired. In the review, there was a required comment in there that said "I shouldn't share a petition with work staff."

Naturally, I was ready to move on. If they didn't want me and my expertise, nor have the respect to treat me like a human being, I didn't want to be there. Despite loving the park, the beautiful area, my seasonal position, and salivating at the thought of conducting an ecological study of coywolves in the park, I was ready to move on. After all, it wasn't like I made a lot of money working for *only* 5.5 months a year in that position, and they clearly didn't want to mess with MassWildlife by hiring me to actually study wildlife in the park. So, when I noted that if the park didn't want me, then I was ready to move on, I meant it. It has been 3.5 years and I haven't been back to the Seashore, one of the largest National Park Service units in the Northeast. Yet, there is currently a 3 month long deer hunting season, 5.5 months of coywolf hunting, 4 of fox, and 2.5 of black bear even though bears don't live within 100 miles of the park. Some national park!

Upon my termination, the next year and a half was a very trying and humbling time for me. I started off acutely depressed and on unemployment. My mental state alternated between raging anger and deep sadness at a park service that I firmly believe stood for the wrong things. Even after the near decade-long anger I had at my former colleagues who abandoned me and the state that repeatedly got in my way, this still stung.

After a few months out of work, I did landscaping and tree work jobs to earn money in addition to a few paid talks on eastern coyote ecology. I then worked at UPS during their busy 2017 holiday season and, after getting laid off in the winter, I re-joined the company from the spring through the early fall until securing a teaching job in September 2018. I liked staying busy and being on the go while at UPS, and it sure is a job where you need a strong work ethic to survive, but I ultimately chose the schedule and lifestyle of being a science teacher as it got me a little closer to my aspirations of getting back into research again.

As I mentioned in the *Preface*, I had never envisioned myself being a high school teacher, but it provided stability and intellectual freedom, which was uplifting after the events of the previous few chapters. I could have a belief and not get blackballed or fired for my actions. I had the autonomy of managing my classroom, and even choosing the curriculum, without administrators blocking my every move.

To this day, I truly believe in the National Park Service's mission of preserving resources unimpaired for future generations. Clearly, this park didn't share that same view based on their reaction and dismissal of the petition to treat the park as such. In due time, I wrote a book that suggested making the Seashore a true national park, as well as other federal lands in the Northeast. In poetic justice, my former supervisor, newly retired, read it and gave me helpful edits!

PEER to the Rescue?

However, my work didn't end there. During summer 2017, I contacted Public Employees for Environmental Responsibility (PEER) and explained my situation. I said that I was not a full-time park service employee but thought I was wrongly terminated by Sue Moynihan and Kathy Tevyaw. It took me a couple of months of courting them for them to start working with Louise and me. But once they read my Research Obstruction Testimonial, and we had multiple conversations, it became clear to them how corrupt the system was in Massachusetts. Especially graphic to them was a video-link I provide on my website that shows a hunting company going on 'coyote' hunts on Sandy Neck Beach, Dr. Auger's old stomping grounds. This is a beautiful protected, coastal area in Barnstable which looks very similar to Cape Cod National Seashore. In fact, at the beginning of that video there is an image of a historic building, The Old Harbor Life-Saving Station, within the national park. Both MassWildlife and the National Park Service try and normalize what predator hunting is by using words such as "harvest" and "their populations are doing fine", but watching the video shows how graphic killing coyotes for fun can be.

After I worked with PEER during the first year to submit that DQA (see Chapter 9) on removing an old non-peer reviewed study that governments used to justify rampant coyote killing, PEER helped us follow up on the 2014 and 2017 petitions to end carnivore hunting within Seashore lands. They knew there was clearly something wrong when petitions like those angered – rather than inspired – NPS to act. After Adam Carlesco left PEER in fall 2018 to pursue other interests, it took the following winter and spring to connect with staff at PEER and push the petition over the finish line. And in July 2019, PEER sent the Seashore a letter detailing why carnivore hunting should end and all other hunting should be limited. I was on *The Trip of a Lifetime* at the time, but read an email that they made a press release and sent the rule-making petition to the Seashore.

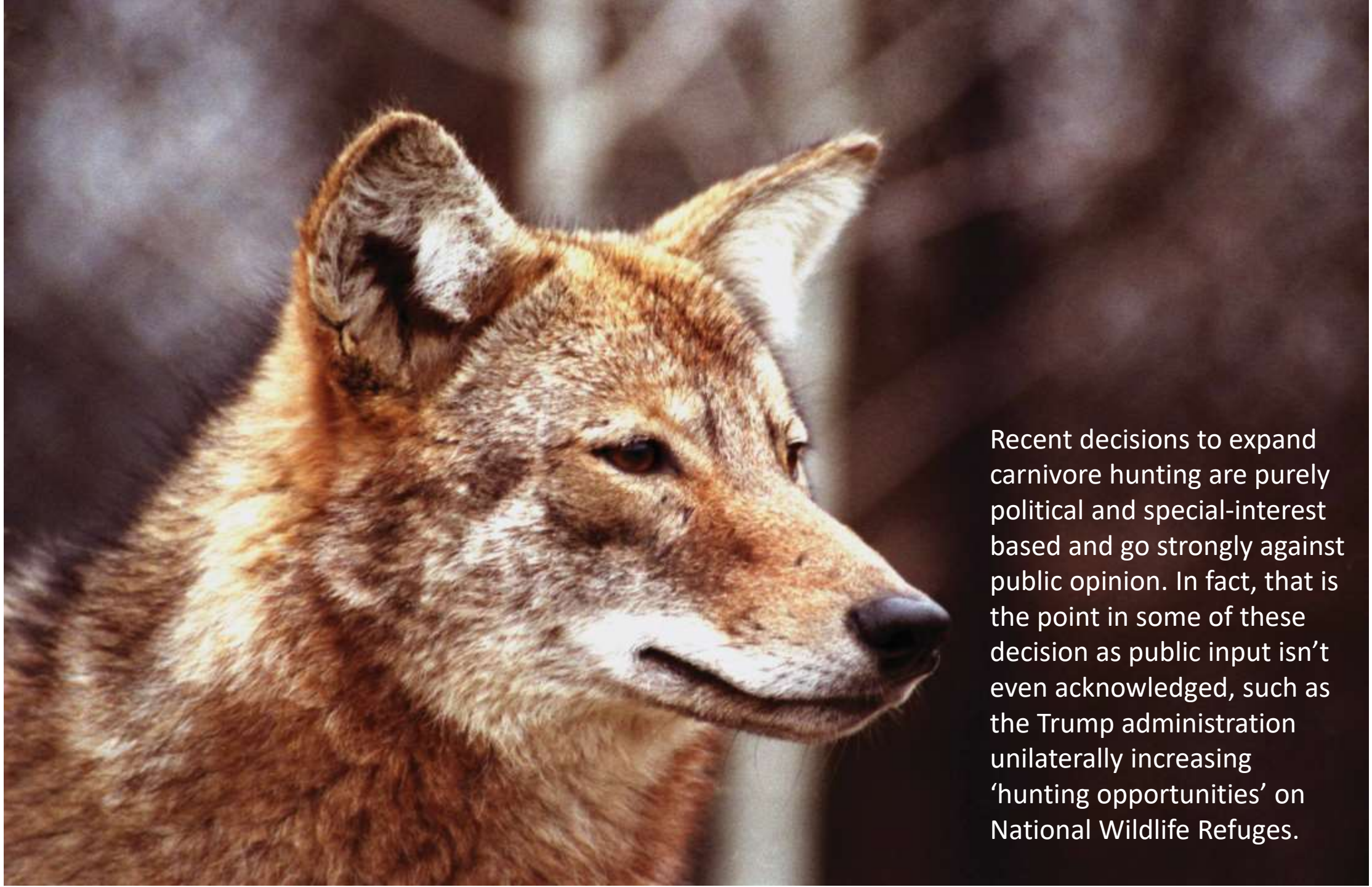
A stunning image of an eastern coyote posing in its snowy domain.

However, as of early 2021, the Seashore has taken no action to my knowledge. This rule-making petition cannot be legally challenged, so PEER informed us that public support for this ban is critical. Hence, this I will provide information at the end of this book to contact the appropriate people to force this happen.

I attended a meeting on October 26, 2019 with the new superintendent of the Seashore, Brian Carlstrom. He spoke at the Nauset Fellowship, a quaint church in Eastham. Louise went to the meeting too, and questioned Mr. Carlstrom as to why the Seashore was allowing things like carnivore hunting and long hunting seasons. He noted that rangers tell him that not many people hunt in the park anymore implying that the resources are fine; but it seemed to many that was an excuse to continue hunting rather than limit it. Before Louise got cut off for asking too many questions, she did point out that upper management staff has the ability to limit or even cancel hunting to treat the Seashore like a true national park. The enabling legislation clearly *allows* hunting in the Seashore; it does *not mandate* it. After the meeting, I noticed that fully half the people at the church, clearly not knowing ahead of time that Louise was going to be there to ask those questions, went over and thanked her for bringing up the issue.

My take was that Mr. Carlstrom, a scientist by trade, is open to new ideas and the petitions that the public overwhelmingly supports. As people talked to Louise, I waited in a small line then spoke with him. I introduced myself and told him about my research and how I used to work for the park. I explained that I had been quiet for the past couple of years out of respect for the park that I love, even though I strongly felt that Sue Moynihan and Kathy Tevyaw wrongly terminated my employment. He clearly knew who I was and we had a respectful ~5 minute conversation. Unfortunately, their lack of action since that meeting necessitates that this information be included within this section for public knowledge.

As PEER has repeatedly informed us, getting the public to support this initiative will be critical. Please see the end of this book to contact the Seashore, as well as MassWildlife who influences decisions within the park. Tell them you want the park to become a protected wildlife watching area, similar to our national parks out west. Recall back to Chapter 8 where I discussed an important study which found that hunting around the edges of national parks can affect the ability to see carnivores within the parks. Thus, it is unfathomable to many that carnivores can be hunted *within* the boundaries of a size-able national park in Massachusetts.



Recent decisions to expand carnivore hunting are purely political and special-interest based and go strongly against public opinion. In fact, that is the point in some of these decision as public input isn't even acknowledged, such as the Trump administration unilaterally increasing 'hunting opportunities' on National Wildlife Refuges.

National Wildlife Refuges

The Trump administration in 2019-2020 ramped up hunting within our National Wildlife Refuges (NWR), seemingly making the word 'refuge' meaningless. This probably makes state wildlife agencies salivate, helping them more fully accomplish their mission of maximizing hunting 'opportunities'. However, even before this initiative, Monomoy NWR on Cape Cod had prepared to allow coyote hunting in 2018-19. This angered many people, fresh from complaining about coyote hunting contests. Luckily, the Director of that NWR had to incorporate public opinion into the decision and people blasted them for following the state's hunting season, within a supposed refuge. A few months later, in fall 2019, the plan was scrapped. Now that a large number of people know the true intentions behind our wildlife managers, people are ready for attacks against our collective majority values. And hunting carnivores, especially in protected places, isn't one of our shared morals.

But the assault continues.

In April 2020, as if tone deaf from a global pandemic that killed hundreds of thousands of people, the Trump Administration mandated hunting on 2.3 million more acres of our NWR. Three of the NWR were in Massachusetts – Great Meadows, Assabet River, and Oxbow. The plan was to allow fox, coyote, and bear hunting 'opportunities', even though black bears were just beginning to colonize that area. I wrote them that the plan reeked of special interests and that they should be spending the ~$50,000 that it would cost to administer the hunts to instead research and educate the public about carnivores. My 2 page letter detailed all the reasons that I've discussed in this book including the fact that I greatly favor carnivore management reform and that the general public clearly does not support these changes. Fortunately, many other groups, like the Sudbury Valley Trustees, agreed and wrote to those NWR voicing their opposition. I was told by two private citizens under direct contact with those NWRs that the new MassWildlife staff (i.e., the folks who succeeded 'The Terrible Trio') tried to have them establish the nearly 6-month coyote season that they allow. The proposed 'coyote' season in those NWR would end in December which irked them as it was about half the length of their set season. As of this writing in January 2021, the federal government was ignoring public opinion and going ahead with these hunting extensions.

Like their larger cousins, wolves, coywolves are highly intelligent, social, family-oriented animals that are often misunderstood.

Non-Governmental Organizations (NGOs)

The Massachusetts Audubon Society (MassAudubon) is a wonderful NGO that protects 38,000 acres in dozens of mini national park-like wildlife sanctuaries throughout the state. I have supported them for years and love hiking and jogging in these areas at dawn as they are sparsely attended during those hours and I can look for wildlife. There is no hunting in these sanctuaries and I've found that wildlife is more visible inside them than in surrounding areas, almost like they know they are protected. It is clear from the rules on their land that MassAudubon's goal is to protect wildlife 'unimpaired for future generations', similar to the NPS.

That position interested me as many have questioned why they are neutral and don't take a position on carnivore hunting, which was especially evident from their silence during the carnivore hunting contest outcry. Dozens of people, in emails to me and on posts to Facebook, like Friends of Cape Wildlife, have questioned why larger conservation NGOs don't speak up more about wildlife issues. Well, the answer probably will not surprise you.

Back when I first started having problems with the state in 2009, I spoke to several lawyers I'd become friendly with in the past decade, asking them questions such as compliance issues and MassWildlife's unjust power over wildlife management. Bill Henchy, based out of Orleans, told me that the state blackballing people was nothing new. After the 1996 Wildlife Protection Act was passed, it took years for Wayne MacCullum to answer MassAudubon's many calls, all because they supported the Act which the state opposed. This obstruction prevented MassAudubon from doing important work even on the lands they owned. At the time, I was astonished, but since then I have spoken with multiple people, including within the organization, and they have confirmed that is true.

I find it astonishing that an organization has to either support, or quietly not discuss, MassWildlife's policies, or they can't play ball. Because of this, when certain groups aren't vocal about things like carnivore hunting – which clearly the public does not support – the state will try and normalize a non-popular activity, even though they know they are directly influencing the voice of certain organizations. The fact that MassWildlife has infected NPS, which are some of our nation's most precious lands, as well as NWRs, and even many NGOs, is insidious.

Eastern coyotes in the White Mountains of New Hampshire.

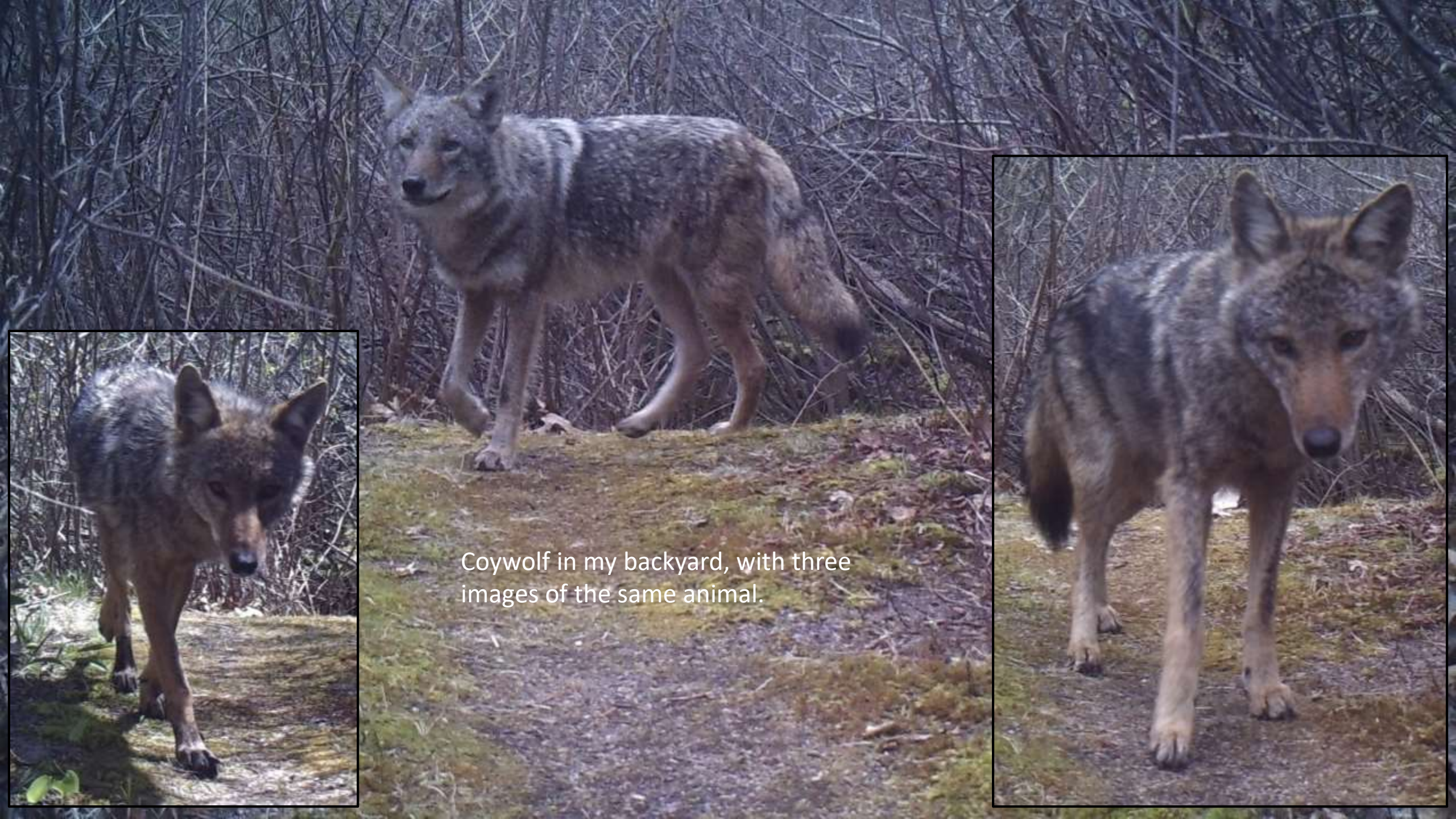
MassWildlife Staff

The final known harmful action that the Terrible Trio took against me before retiring was spreading the message to other staff about how much of a problem I was. When Louise spoke with Michael Huguenin (see Chapter 9) about carnivore management just a couple of years ago, she naturally inquired about why they made my life so difficult and how I should be allowed to resume my research as it was very important. Apparently, Huguenin started speaking very negatively about me to Louise. She was taken back, after having known me for 5-6 years at that point. It just didn't sound right to her.

Soon after the conversation, Louise called me and said something along the lines of, 'Man, you must have done something to anger him for he didn't have many nice things to say about you'. I chuckled, and distinctly remember saying, "Louise, I've never met the guy before nor communicated with him". She was baffled. Then, I continued, "It doesn't surprise me though as I knew the (Terrible Trio) would keep up their smear campaign as long as they could. They have gone out of their way to bad mouth me to every agency and professional that I've come across. I'd expect nothing less from them."

In truth, I have no doubt that Mr. Huguenin and I would have much in common. If given a chance to see what I did, he'd probably be fascinated with my research. I bet he would even visit my study site like Tom O'Shea and others had previously. We'd probably even get a beer together.

All through my life, I've always tried to give people the benefit of the doubt, and most especially, a second chance. By teaching in various settings and coaching track and field, basketball, and football, I've come across people from all walks of life. I never try and judge a book by its cover. A simple conversation can often be critical to reestablishing a miscommunication or even fundamental difference. The treatment that Tom French and Wayne MacCullum showed me was inhumane, and bordered on criminal, yet MacCullum has a Wildlife Management Area named in his honor and French retired with accolades in 2019. No wonder why so many people are unsatisfied with their government.



Coywolf in my backyard, with three images of the same animal.

Getting Shot

Ironically, within days of the first 'Carnivore Hunting Ban' letter and petition that was submitted to the Seashore and NPS in December 2014, I was the victim of two gunshot wounds from a hunter. The shooting occurred in the Town of Barnstable on state-owned land about 30 minutes past dusk when the hunter saw movement and opened fire at me and my dog, shooting multiple times in my direction, saying he thought there were deer nearby.

I survived the encounter but left a half-mile blood trail to the shooter's car where he called 911 to help me. I had to have a buckshot bullet removed from my neck and had my back and hand also stitched up from gunshot entry wounds. In fact, I nearly lost my left pinky from the incident. The man who shot me had a criminal history and illegally possessed a firearm, but he somehow obtained 'a valid hunting license' from MassWildlife. He was hunting in the newly established second week of shotgun deer season, which was the first or the second year that MassWildlife extended hunting to allow shotgun use for two full weeks on heavily populated Cape Cod. I searched for and contacted lawyers thinking this was a slam dunk case against the man and MassWildlife. To my shock, no one wanted to touch it with a 10-foot pole. The man had no property that he owned, and lawyers didn't want to battle the state even though the shooting happened on state-owned land.

The event deeply affected me and created an even deeper conviction that our wildlife agencies need to be overhauled. The man was sentenced to probation and eventually went to jail for other infractions but his lawyer argued even against probation in the case against me which is astonishing given what he did. MassWildlife gives people free will to go out and kill what they want for long periods of time. Meanwhile, in other regions of our country, there are unarmed people getting killed every day by our entrusted law enforcement.

Final Thoughts

I hope that these past few chapters explain why the 'system is so rigged' and needs to be reformed at so many levels. In review, MassWildlife has exerted undue influence to impede my career and research. They have also done likewise to any organization who disagrees with their ideology. As an independent scientist with considerable expertise in wildlife and canid biology, the state ignored an opportunity to collaborate and perhaps advance their understanding of wild canids which might have been a basis to adapt the agency's management to fulfill their duty to protect public trust resources. Instead they have chosen to defame me and my work, to disrupt my professional affiliations, and to prevent me from conducting unique and valuable research that I had begun over a decade and a half ago. While this might occur in some countries where undue political interference, such as fascism, is common, it is unacceptable in the United States.

I completely understand and respect people and organizations who need to protect themselves for fear of reprisal, as I've experienced. People have jobs, homes, and families. Most aren't willing to lose them even when they disagree with how an organization is run. The problem with that, however, is that most biologists write books toward the end of their career when a political fallout won't hurt them. But that is potentially up to 40 years, which creates inertia in the system causing change to be glacially slow, if at all. Bucking the system upends one's life but it also creates a spark which notifies the public about the actual functioning of our various levels of government. I am hoping that the end result of this book is that it affects change for the better. As two different ranger friends told me at the Seashore, "It is so obvious and unfortunate what the state has done to you. I wish I could do something about it and help you." While they couldn't aide in an official capacity, you can. Please continue reading.

Trail-camera images of eastern coyotes. This technology has revolutionized wildlife photography, allowing one to obtain images of elusive animals like coywolves. The animal in the top right was radio-collared and identified through a sequence of pictures even though his collar's batteries were dead at the time.

Chapter 14: Where are We Now?

I published Suburban Howls in 2007 in my early 30s thinking I had the rest of my career ahead of me. Little did I realize at the time that I would be finishing this book over 10 years later in my mid-40s and not be conducting the research that I live for. I have been deprived of some of the most productive professional years of my life for pretty obvious political reasons.

I have often been asked, 'Why don't you just go to another state and resume your research?' That is a legitimate question but one fraught with potential difficulties. First, most states are hostile to coyotes (much more so than Massachusetts which "only" allows them to be killed from mid-October to early-March) and that infects how those managers treat them and possibly the researchers who want to study and/or better protect them. Look at the situation in Maine, for example, as the state pretty much ignored the presence of wild wolves in their state. Second, unless funding opportunities were presented, moving to a new area is not very realistic considering it is logically difficult to not only move but to start up a research study without financial support. Lastly, unless supported by a given agency, obtaining a permit, let alone funding to do the study, might be challenging given the political nature of state wildlife agencies. A parallel thought is to conduct research in a place like a national park that better protects wildlife and is generally more accepting of outside research. That was my intention of initiating the study at Cape Cod National Seashore, but as I wrote in detail in the last chapter, that didn't work out, at least up until now.

One surprising aspect of my work is how many people have contacted me over the years and said something along the lines of, "I had this really cool sighting, and for the animal's safety I am not telling anyone their location, especially the state." This has occurred dozens of times, with folks from multiple states. I have noticed that in the 20 years of me conducting research, a growing number of people have caught on that wildlife agencies are first and foremost hunting advocates and make no attempt to protect individual animals that you and your family might want to watch rather than kill. Of course, millions more are spent on wildlife watching but unless they are in a protected area (say a national park or an urban area where hunting is not allowed) animals such as coyotes and other common animals are not protected.

Eastern coyotes are perfectly adapted to the environs of the Northeast. No doubt the eastern wolf genetic influence aides in their evolution to the region.

Plea

It is my hope that people will be moved by this story; both the coywolf's, as well as mine. It is clear that because I have chosen to publish work that contradicts MassWildlife and to speak against bad policy, I've been the victim of serious discrimination which has halted my career, ruined professional relationships, and caused me great anguish, as well as prevented valuable research from being conducted. The wildlife agencies responsible for this abuse cater to narrow interests. For example, when listing major professional accomplishments, past Director's have stated how animals under their leadership were killed in much greater numbers. While they are quick to implement longer hunting seasons, they are equally adept at ignoring research that conflicts with their ideology to curtail it. In my case, it is most notable that MassWildlife has disregarded the numerous papers that I and other scientists have published on the territorial nature of coyotes and the fact that killing them does not help reduce their populations, but does affect their family dynamics and potentially their ecological effectiveness. Perhaps most notable due to its national coverage, are the findings that the eastern coyote is a hybrid between coyotes and wolves. Yet, state wildlife agencies in the Northeast U.S. do not even recognize the coywolf term, let alone debate about it. The name recognition is significant because the agencies might have to better protect these animals if they are acknowledged as part-wolf which in actuality, they are. This would especially be the case in the northern states of New York, Vermont, New Hampshire, and Maine where wild wolves are indeed recolonizing and are getting killed because people 'thought they killed a coyote' when in fact there are no pure 'coyotes' in the Northeast.

Make no mistake. Nothing will change, even with this book, unless the policies discussed within it are actively challenged. It will take legislators, lawyers, journalists, and most importantly, you, the general public, to force change. If these efforts do cause reform, it will show that we do have a modest amount of democracy in our public institutions. This is most notable with carnivore management, where predator hunters are a small minority of the hunting public, who are already a tiny segment of the population (in MA it is literally ~1% of the 1%, or 0.01%). Even MassWildlife acknowledges that people that kill more than 1-2 coyotes a year (which would be a reasonable bag limit per hunter as discussed in Chapter 9), are a tiny fraction of predator hunters. Change should be achievable.

Given the changing demographics of fewer people hunting while many more people pursue wildlife watching and take a general interest in non-consumptive uses of wildlife, it is critical that these agencies reform accordingly. Right now a major initiative of theirs is focused on gaining more hunters and retaining existing ones, all while society is headed in a different direction. Thus, it is dire that the people at the top of these agencies are targeted first, especially since the vast majority are middle-aged white men who have had monopolies over wildlife policy and department ideology for decades, but who now are a minority in their own right. The pro-hunting at all costs stance and cherry-picking of science to support an agenda needs to be replaced with a more egalitarian model where wildlife boards consist of a variety of stakeholders, all of which have a legitimate interest in wildlife policy, including wildlife watchers, NGOs, humane/animal rights groups, and concerned citizens, in addition to, but not dominated by, hunters. I discussed some of these strategies at length in my paper on how red wolf (*Canis rufus*) recovery in the southeast U.S. has been hijacked by special interests. If changes are not made, then additional scientists' careers will be destroyed because they hold opposing views not shared by the staff at the top of state wildlife departments.

A New Era?

The MassWildlife meeting in June 2019 (see Chapter 9), where I spoke against hunting contests and for reforming carnivore management in general, was the first time I had interacted with a MassWildlife member since 2009, except for investigating a possible shot collared coyote with Jason Zimmer, MassWildlife Southeast District Manager, in the field in 2011. (It turns out the collared animal survived the shooting, and I continued to follow it as it slowly recovered from the gunshot wounds that made it lame for a few months.)

I walked into the building at the Massachusetts Military Academy (MMA) in the town of Bourne with Louise Kane, and had a strange feeling after being out of contact with my chosen profession for so many years. I was literally numb and felt nothing, neither good nor bad. One of the first people I saw was Zimmer and we briefly said hi to each other before I walked into the room where the hearing was taking place.

Wild eastern coyotes traveling including one with a deer buck head in its mouth (*Bottom Left*) and a large radio-collared male *(Top Left).*

As I was leaving the main lobby to go into the hearing, an older man, whose name I can't remember but previously worked for MassWildlife, loudly exclaimed to Zimmer, "I guess that answers the question". Once he repeated it again, I looked back and stared at him, but didn't reply. It was obvious his comment was referring to me attending the meeting. I was 10 years removed from the Terrible Trio destroying me. That heckle-like comment meant nothing to me because he wasn't going to prevent me from talking, or the crowd from rallying against MassWildlife's policies.

At the end of the meeting I was able to talk with Jon Regosin, Deputy Director for MassWildlife, who now had Rob Deblinger's former position. I had met Jon before when he briefly took a position at Boston College when I was a graduate student there, before he took a position with MassWildlife. He was cordial and I gave him a list of papers with my *Research Obstruction Testimonial* at the top. I said, I just want you aware of what your predecessors did to me. I honestly wasn't sure what he knew about all this since he recently recommended me to speak in the town of Newton at their annual 'Conservators' meeting, a local land trust within the metro-Boston region. Mr. Huguenin, who Louise Kane spoke to, was also in attendance at MMA, and I didn't know how that affected the dynamics of my backstory. I knew that they were all at the listening session to do just that: hear what people felt about carnivore management, so they were on their best behavior.

I had a feeling during the meeting that this group of upper-level staff was different. They were newer and less entrenched in their positions and were more willing to listen to diverse perspectives. Even though they still claimed the same rhetoric that hunting was a core function of MassWildlife, they clearly knew that most people don't hunt anymore and many are catching on to MassWildlife policies and how it doesn't jive with their personal values. In other words, MassWildlife had to be receptive to the public or risk a backlash.

I thanked Dr. Regosin for his time. True to his words, he contacted me less than a month later, while I happened to be on *The Trip of a Lifetime*. We spoke for about half an hour when I was in Wind Cave National Park, South Dakota, and then emailed each other when I returned in July. I discussed how I feel that I've been majorly wronged and that MassWildlife should make it right. I mentioned how I had many colleagues that could testify to this and that MassWildlife has a high level of autonomy which can be problematic, as discussed throughout this book. I was clear that I didn't want to bad mouth the agency for the rest of my life but, on the same note, they've done nothing that would make me do otherwise. In other words, could we find common ground to move forward?

A fascinating 2-page sequence of a radio-collared coywolf traveling on an ice flow along the edge of the ocean.

Problematic Claims

I continued the conversation with Regosin about science related issues mostly related to the PowerPoint talk given by the Furbearer Biologist for MassWildlife, Dave Wattles. It was an interesting presentation but I believed there was some inaccurate and misleading data presented. First, I heard from at least five people who were irked after the talk, and others voiced it during their public comments, of how coyotes were perceived to be replaceable like figures on a game board. Wattles noted how individuals are essentially interchangeable and if you kill one, another will just show up. To a degree that is true, but in the process families are torn apart and group sizes often become smaller and certainly don't stay the same as Wattles suggested. There was no discussion or consideration of the social, family dynamics that exist within a pack or of the people who like to watch specific individuals in an undisturbed (i.e., non-hunted) setting.

There is becoming an increasing and major disconnect between wildlife management and the general public's view toward wildlife and the points above highlight many of those concerns. It is now called the mutualist vs. domination/utilitarianism divide whereby mutualism describes a set of beliefs in which humans and wildlife are relatively equal, so individuals with this viewpoint are against actions that harm wildlife. On the flip side, individuals with the latter perspective believe that humans are superior to other animals and should be used for our benefit. This latter perspective, of course, is the entrenched ideology of wildlife agencies. Mutualists now make up the largest proportion of the U.S., with traditionalists only at 28%. And this gap is widening by the decade with hunter numbers declining and wildlife watchers now 3.5 times greater. A more urban populace is further widening this divide.

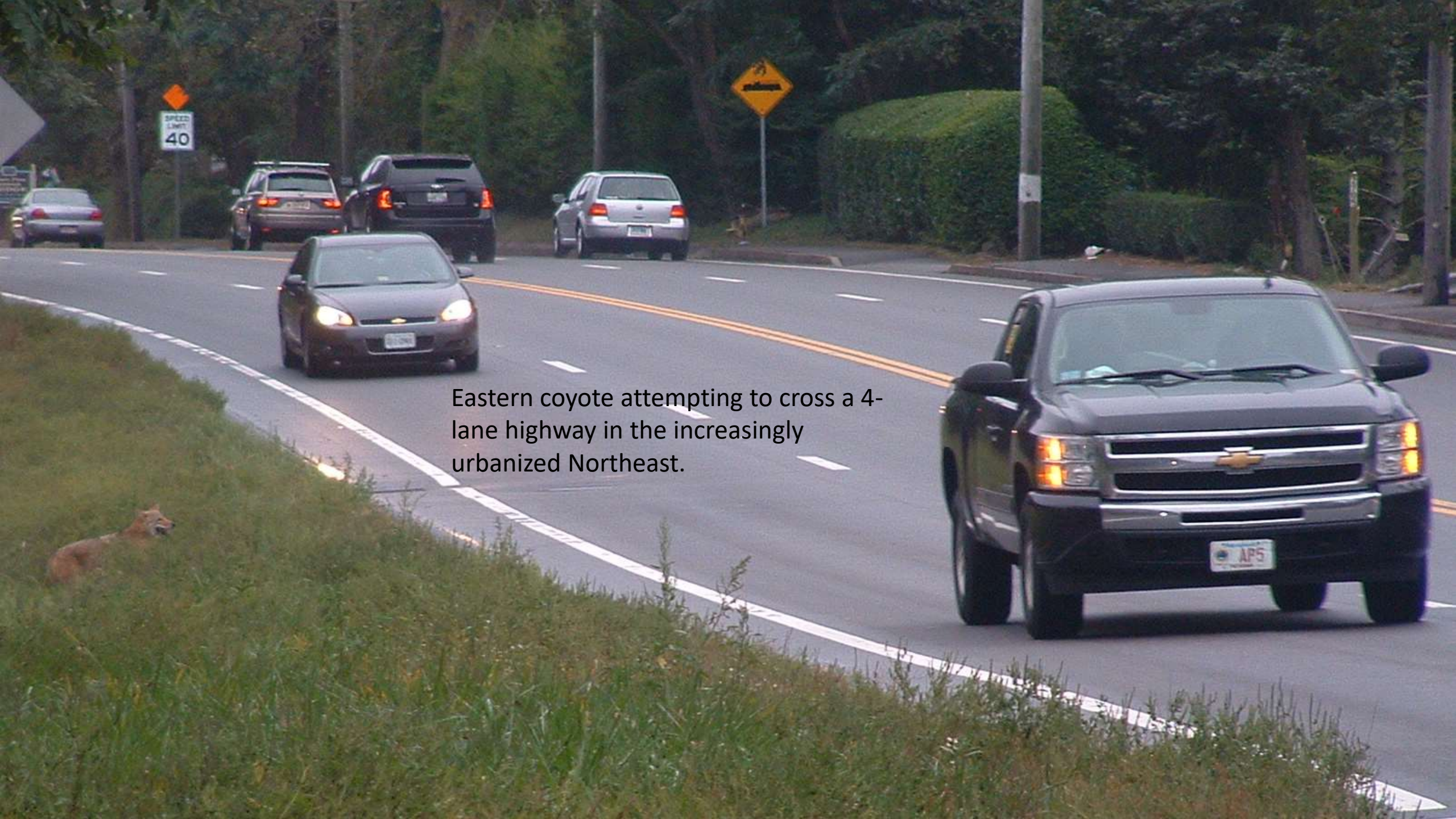
Author Kevin Bixby noted that this domination orientation that prevails among hunters and wildlife managers leaves little room for a definition of conservation that includes consideration of the rights or interests of individual animals. Bixby added that any definition of conservation that does not include a measure of compassion and justice for individual animals is out of step with public attitudes, which are moving away from regarding wildlife as strictly a resource for human use and toward respecting wild creatures for their intrinsic right to exist as well. Under our current system of wildlife management, it is simply assumed that if hunters want to kill an animal, and the species is not endangered, then hunting will be allowed, regardless of public opinion. In fact, MassWildlife states that is their primary mission.

During the MassWildlife meeting, Wattles discussed the genetic nature of the eastern coyote, which was nice to see, but repeated the inaccurate notion that eastern coyotes consist of a 'small percentage of wolf'. In my email to Regosin, I corrected that with the updated figures from Chapter 2 whereby the coywolf really is more like 60-65% coyote, 25-30% wolf, and ~10% dog. In other words, it had much more wolf in its DNA than it was given credit for. I mentioned the often-cited, *outdated* studies involving the "84% coyote and 8% wolf" values which don't account for the eastern wolf, which are now widely regarded as a distinct species native to this region. I provided literature to support this claim (*Note*: all of those sources are available in the *References* section of this book). It is curious, and seems convenient, that all state wildlife agencies seem to use those old figures when new and more accurate data is readily availably.

I also reviewed the ecology findings and pointed out that Wattles talk had none of my research findings in his discussion and he greatly overestimated the 'coyote' population in Massachusetts. Regosin confirmed to me that Wattles used data for coyotes from outside of the Northeast to make his estimate even though northeastern coyotes have always been documented to live at lower densities than the rest of the country. This flabbergasted me. I questioned that it was very problematic to use data on coyotes from outside of the Northeast due to the hybridization issue and the animal being unique in this region. Based on my data of pack sizes (3-4) and territory sizes (8-10 square miles per pack), I have always felt that 3,000 to 5,000 eastern coyotes in the state would be a more accurate estimate, while their value of 9,000-11,500 is a whooping two to three times higher than what the literature supports for the Northeast region. I also made sure to note the importance of estimating populations in late winter when they are at their annual lowest before new pups are born in late March – early April.

I ended the email noting that "I would have a keen interest to start a new relationship with MassWildlife, as I have stated for 10 years now." I included a link to a short article describing how I also have attempted to make this my life's work. I even offered to meet with them whenever they had an opening in their schedules.

Jon Regosin made sure to thank me for sending him the information, and that he said he would forward everything to the furbearer biologist. I thanked him for the 'ear' but unfortunately never heard back from him unless I contacted him. For instance, in early March 2020, I forwarded him my new article on a pictorial diagram of wild *Canis* in North America. He showed me the courtesy of quickly thanking me for the article but it was the last time we conversed despite my clear statement the summer before of trying to renew efforts to conduct my research.



Eastern coyote attempting to cross a 4-lane highway in the increasingly urbanized Northeast.

Coyotes will use bridges to cross over structures including this old bridge over a river.

As of January 2021, I am not aware of any retraction or revision of population estimates in Massachusetts based on scientific data, recognition of the high level of hybridization that make up coywolves, or any acknowledgement of how the state treated me in the past. I am fairly certain that Regosin or other upper management staff contacted Tom French and Wayne MacCullum, but I am unsure if they will ever act on their own volition to do what is right and allow me to resume my career while I am still relatively young.

What can be Done?

If you are greatly disturbed by the last few chapters of this book, you are not alone. You also probably realize I wouldn't be able to type page after page unless it were true, as frightening as it is. The couple weeks that I worked on these chapters was literally a depressing nightmare revisited. But it felt good at the same time as living with this treatment for so long has literally sickened me; it's certainly changed me and made me more skeptical of government and people in general. I am no longer surprised at what anybody might do to somebody else, especially when that person is put in a position of power. I have always been independent and done things on my own. This book shares the best (research results) and worst (discrimination) of those last 20+ years of eastern coyote research, describing my experiences, a most unusual and unlikely journey at that. The policy suggestions listed below are designed to alter the structure of wildlife agencies to avoid what has happened to me, and no doubt to many others:

1. Immediate restructuring of the fish and wildlife board to include diversity in user groups. For example, wildlife NGOs (who are much more numerous than hunting groups, especially in urban states like MA), humane groups, concerned citizens, and independent biologists should be included in directing wildlife policy. They should not be treated as outsiders. During the 2019 hearings, for example, we learned that 5 of the 7 (71.4%) board members were hunters, which is way above the <1% of MA residents who hunt. While other states aren't nearly as close to achieving any kind of equity, MassWildlife is taking strides to achieve this but still aren't fully listening to the public on the policy changes desired. More needs to be done nationwide.

2. Immediately return all hunting seasons to 1995 levels or before. While there is a way to go to make wildlife management equitable, in the last 25 years MassWildlife (and just about all wildlife agencies) have completely liberalized hunting seasons due to the relative lack of hunters. Shortening seasons this would still allow hunting but it would limit deer hunting to a couple-few weeks of bow-hunting and 1-2 weeks total of gun including shotgun and primitive arms. Currently there is an 8 week bow and arrow season and 5 week gun season for deer. Bear hunting has also been greatly lengthened as has 'coyote' and other animal hunting seasons. This simple law change will immediately shorten hunting seasons before an overhaul is completed. The goal of a state agency shouldn't be to celebrate record killings but that's exactly what they do with deer, bear, and other animals, including coywolves.

3. Add staff members whose jobs are specifically to consider wildlife watching opportunities and non-lethal control of wildlife. They should be allowed to advocate for non-hunting wildlife watching areas without fear of losing their jobs. Also, there shouldn't be institutions so focused on special interests that they can interfere with and influence policies in our National Parks, and other important places. This should help implement the other suggestions, like #4 below.

4. Reconsider the management of carnivores that aligns with their ecological, aesthetic, and cultural importance. The Carnivore Conservation Act for Massachusetts, which is discussed at length in this book, especially Chapter 9, can guide managers to more humane and publicly accepted hunting practices including providing refuges from hunting (like on state and federal parks and forests), establishing bag limits, banning baiting and night hunting, and limiting or ending trophy hunting of carnivores.

5. Provide for an independent body, separate from the traditional fish and game board, to manage species like carnivores that are not hunted for food. This would be especially important in more rural states where hunting as well as livestock interests dominate wildlife management policy. An agency more dedicated to parks would seem reasonable as they are typically more concerned with preservation and less influenced by special interests. This would remove the conflict of interest that exists within wildlife departments nationwide. Consideration of strategy #1 will help this vision.

6. Have required ethics training sessions with notable experts like Dr. Bill Lynn. Ethics and Compassionate Conservation are a big part of Conservation Biology yet is barely acknowledged in the field of Wildlife Management. These training sessions will relate to the mutualist vs. utilitarian ideological shift.

7. Revising the Director position term at MassWildlife to something that is limited to a reasonable length of time (perhaps 4 years) instead of an indefinite period that prevents wildlife policy from changing for generations due to ideology and the long tenure of the position. This should be a science-based position and be attentive to the public and not one based on special interests and politics. I read nationwide of unqualified directors, which further underscores that these are often politically-based (and biased) positions. This needs to change.

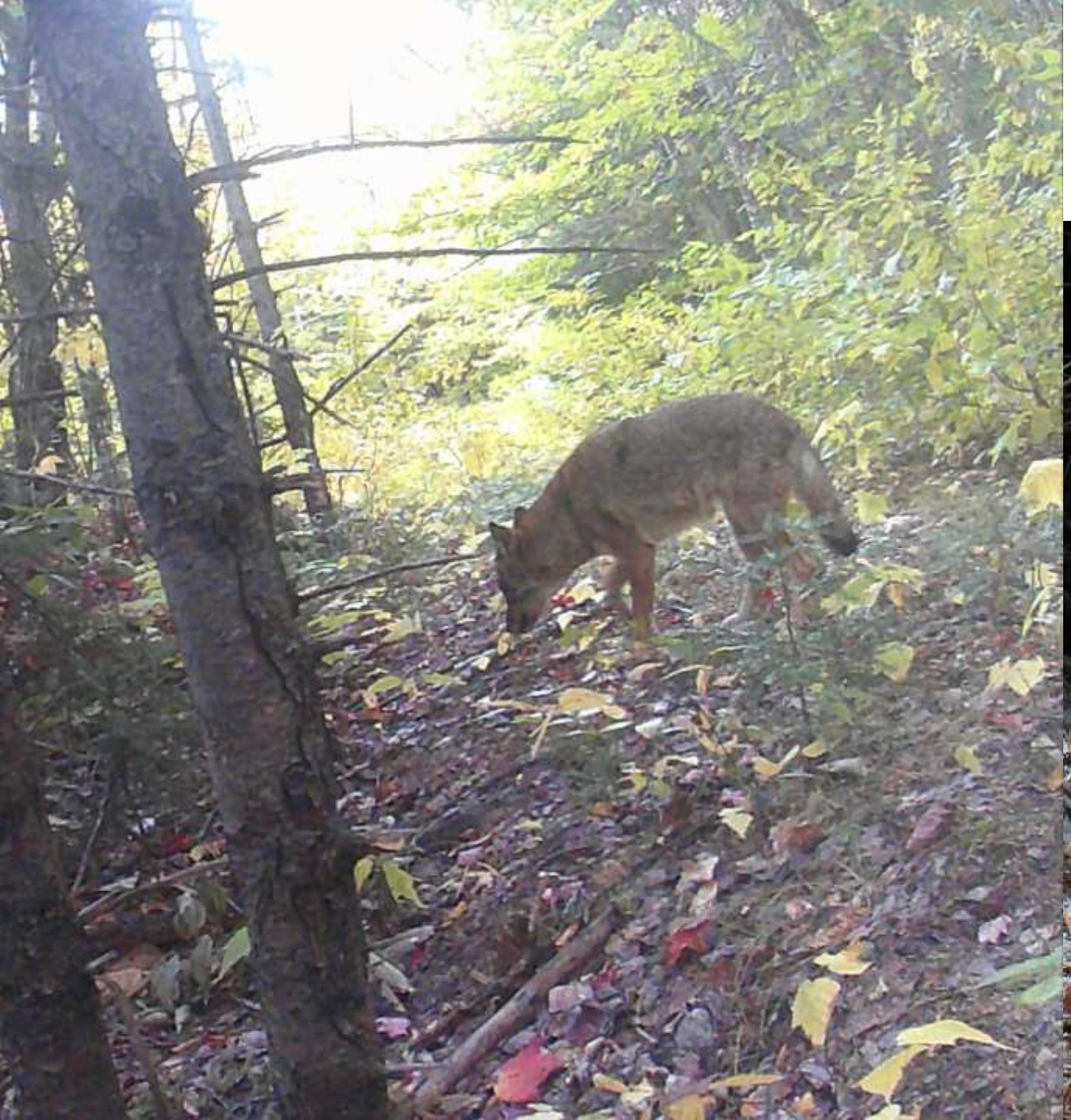
8. Provide for an independent agency (like from the Governor's office) that is not directly tied to wildlife agencies to issue research permits and provide for a public and transparent appeals process. The current conflict of interest couldn't be higher with an agency that explicitly acknowledges their mission as providing hunting opportunities (to a small minority of people) even though the public doesn't agree with many of their policies, especially for carnivores. It doesn't take a genius to figure out that someone like me, with an obviously different ideology, would have problems with the agency given its structure.

This could easily be accomplished as it is in the National Park Service (NPS). The NPS uses an independent agency that reviews protocols for individual parks throughout the country. Also, the NPS issues 3 year permits which seem much more reasonable than MassWildlife's annual permits that can have much more political interference associated with it on a more regular basis.

9. Have wildlife departments funded by multiple sources, including general funds and sales tax revenue. Some agencies, like in Missouri, are moving towards this funding scheme. This will remove the inherent bias in hunting and fishing dollars funding most of the department and will also implicitly acknowledge that wildlife watching is an important economic activity, as has been discussed at length in this book.

One of the more stunning photos that I have seen of an eastern coyote/ coywolf. It was taken in central Massachusetts by Janet Pesaturo.

Eastern coyote investigating a scent in Northern Maine *(Left),* and another one caught in the flash of a camera in central Massachusetts (*Right*; Photo by Janet Pesaturo).




Eastern Coyote/Coywolf

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The following research materials were used to obtain information for this book and most sources were provided in respective chapters. However, rather than quoting articles in citation format at the end of sentence (e.g., "Way 2020"), which is the traditional way, hyperlinks were provided that enabled the reader to click on select links to learn more about a topic. Nearly all of the science found in this book comes from these readings. While not exhaustive, these references as a whole will provide an accurate picture as to actual coywolf ecology, behavior, genetics, and management throughout the Northeast. The citations below are provided without hyperlinks to give the reader a more traditional, clean format. Please note that the articles that I published are available as free .pdf files on the Publications Page of my website: *www.EasternCoyoteResearch.com*.

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Eastern coyotes (coywolves) in the White Mountains of New Hampshire.

Eastern coyotes/coywolves in muskeg bog.

Wildlife is Worth More Alive than Dead! Decree to Formalize Wildlife Watching as a Core Function of State Wildlife Agencies

Note: Please go to the very end of this book for contacts to copy and paste and then send this message to the appropriate people, especially your legislators, the Governor, and MassWildlife staff.

Recent efforts that banned carnivore hunting contests in Massachusetts in 2019 led MassWildlife to explicitly state that one of their core functions was still to develop and maintain hunting and trapping 'opportunities', even with contest hunting now banned. However, given the demographic changes in Massachusetts, I strongly suggest verbiage to make wildlife watching – and not hunting – a core component of wildlife agencies. Therefore, I present a decree to formalize wildlife watching as a core function of state wildlife agencies:

Whereas in the last 10 years MassWildlife has increased hunting seasons on carnivores despite clear public disapproval of these increases (Jackman 2010)…

Whereas hunting seasons have been greatly lengthened for most species (including deer, bear, 'coyotes', and turkeys) since the mid-1990s despite (and actually because of) declining hunting numbers…

Whereas MassWildlife celebrates record killings (not population sizes) of deer, bear, and other animals, including coywolves…

Whereas less than 1% of the Massachusetts public hunts, and a small percentage of that 1% actually hunts carnivores (USFWS 2011)…

Whereas 1.8 million people (32.6 times more than hunters) categorized themselves as wildlife watchers in Massachusetts in 2011 and spent $1.3 billion (14.6 times higher than hunting) annually on wildlife associated recreation (U.S. Fish and Wildlife Service 2011)...

Whereas 11.4 million (4.7% of) Americans hunt, spending $26.2 billion annually, versus the 86 million (7.5 times more than hunters) people in the U.S. who spend $75.9 billion (a value almost 3 times more than hunting) on wildlife watching (USFWS 2016)…

Whereas these disproportionate numbers greatly favoring wildlife watchers are consistent throughout the U.S., especially in urbanized states, and recent research estimates that over 90% of funding for wildlife conservation comes from non-hunters despite the repeated claims by wildlife agencies that hunters pay for wildlife management (Smith and Molde 2014)…

Whereas lethal control of carnivores, including coyotes, in addition to being politically unpopular with the voting public, can also affect the chances of people observing carnivores (Borg et al. 2016)…

Whereas the territorial nature of carnivores makes it ineffective to kill them (Way et al. 2009)…

Whereas observing carnivores is a major economic driver in many regions (Way and Bruskotter 2012), with people specifically visiting regions where carnivores are protected to have "peak life experiences" (McIntyre 2016)...

Whereas research shows that hunting predators, even in border areas outside of core areas (e.g. a protected national park), can reduce the sightability of these animals (Borg et al. 2016)…

Whereas scientists have recommended using compassionate conservation when managing carnivores, especially in areas where tourism – such as throughout Northeast – is an important economic engine for a region, even where canid populations are stable and in little danger of long-term decline (Povilitis 2016)...

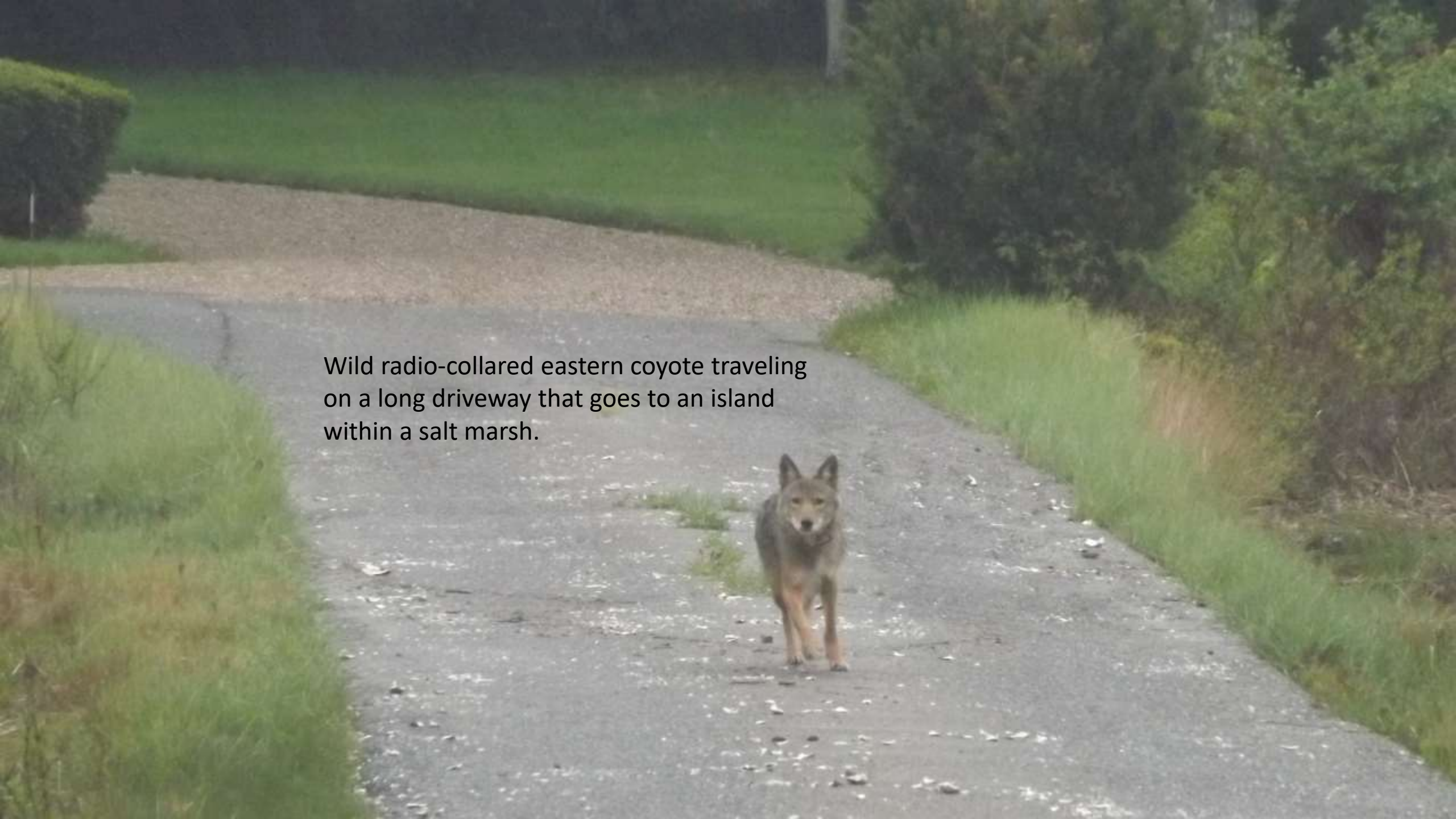
Whereas any potential lethal control (e.g., long or year-round 'coyote' hunting season with no bag limits) should keep in mind that the vast majority of the public are typically against such measures (Jackman and Way 2018) and it will directly affect a growing number of people who simply enjoy viewing the same animals and knowing that they are out there…

I recommend that my elected officials and MassWildlife use the language in this document to create a statute to officially expand our state wildlife department's ("MassWildlife") mission, beyond just providing hunting opportunities to a declining base, to making watching wildlife – and setting aside wildlife watching dedicated areas (like National and State Parks and similar areas) – as a primary priority and core function of MassWildlife. In addition, hunting seasons should be shortened to allow the activity while making wildlife watching a bigger and more important department objective. This would ensure democracy in decision-making!

Please note: For people living in different regions, please just change "MassWildlife" to your state agency and go to the back of this book to submit this 'decree' to the listed contacts or to your appropriate contacts.

Coywolf pair traveling in the wilderness of the White Mountains of New Hampshire.

Former students of mine observing and radio-tracking eastern coyotes.



Wild radio-collared eastern coyote traveling on a long driveway that goes to an island within a salt marsh.

What You can do to Help Eastern Coyotes and My Research

"A man dies when he refuses to stand up for that which is right. A man dies when he refuses to stand up for justice."
– Martin Luther King, Jr.

This section is dedicated to empowering you, the reader, to take action. It is up to you to spend a couple of hours of your own time to act. As Mark Elbroch in *The Cougar Conundrum* discussed (p. 212), adding frown emojis to social media posts is just being a spectator and will not do enough. State wildlife agencies need to be flooded with emails, comments and phone calls, and wildlife advocates need to show up at their wildlife board meetings. They need to be part of the process. In short: **If you don't speak up then you are complicit in the status quo of current wildlife management.**

Please be aware that it is unlikely that NGOs will do what you expect of them because of the political and other reasons discussed in this book. For example, no larger organizations in the Northeast have yet acknowledged nor showed interest in the *Carnivore Conservation Act* as a step forward with carnivore management despite the concern of this by more national groups like Predator Defense and Project Coyote. Yet, the hunting contests were made illegal based on key individuals and their efforts, including Louise Kane, J.D., and Elizabeth Brooke, Friends of Cape Wildlife. They organized public talks by biologists which concluded with mass rallies to protest outside of organizations supporting the contests. They also created email campaigns to help numerous people contact their legislators to force MassWildlife to act. Never think that you can't be the reason for change.

Below are some issues where you can take action. It is important to contact multiple entities for each situation so it can't be ignored, which it often is. Remember, relentless pressure needs to be applied. These are authoritative institutions that have broad powers to do what they choose. Organize a mass of people, similar to a protest, to contact these organizations:

1) If you are **furious about what the state did to me**, please contact the Governor of Massachusetts, Senator Julian Cyr, other legislators of your choosing (e.g., your local town reps), the Town of Barnstable, and MassWildlife to voice your opinion. Also, contact the press. Phone calls help too! There needs to be endless pressure applied and having a Senator (Cyr) from Cape Cod copied on all of the communication will inform him to make sure that the state does something. The Town of Barnstable and Governor can be given copied messages that are sent to MassWildlife and Senator Cyr to let those entities know how you feel. It is clear that outside pressure is necessary to even force the Governor to act. It is easier to cover it up rather than deal with it.

Please note: While most of the actions below can have information copied and pasted from referenced materials in this book or via websites linked from here, to help me here you will have to come up with your own statement, or create a form letter for others. This is highly personal and I do not feel appropriate providing a statement. But I do appreciate your interest and help.

2) Copy and paste the "**Decree to Formalize Wildlife Watching as a Core Function of State Wildlife Agencies"** at the end of this book to the Governor of Massachusetts, Senator Julian Cyr, other legislators of your choosing (e.g., your local town reps), and MassWildlife to voice your opinion for Massachusetts residents. For people living in other states, please contact your Governor, a key state representative, and your wildlife agency.

3) Support the petition to better protect carnivores in one of our largest national park units in the Northeast, which seeks to **ban carnivore hunting and reduce overall hunting at Cape Cod National Seashore**, folks need to contact Cape Cod National Seashore, Senator Julian Cyr, other legislators of your choosing, and MassWildlife, who has undue influence over the federal lands in Massachusetts, and question why they even allow carnivore hunting in the first place and why all hunting isn't reduced there. After all, it is a national park. In addition, see the PEER letter from summer 2019 petitioning for this too. Nothing has happened since that letter was submitted.
You could send in a short letter of support and/or just copy and paste the petition and send it to them. Consider a protest at Seashore Headquarters to get them to act.

4) To implement the *Carnivore Conservation Act* of Massachusetts, please contact the Governor of Massachusetts, Senator Julian Cyr, MassWildlife, and your local legislators to voice your opinion. You can copy and paste the 2 paragraph "*Proposed Regulatory Changes*" from Chapter 9 and say you want to see changes implemented. For people living in other states, please contact your Governor, a key state representative, and your wildlife agency.
Also, consider organizing a protest outside of your state wildlife agency or at the Governor's office to demand these changes take place. Or, create a ballot initiative to let voters decide themselves if people should be hunting carnivores.

5) To create more protected National Parks in the Northeast, which would function as de facto wildlife watching areas (see #1 above), read my 2020 book on the subject and contact your local representatives and state Senators via this link, which has a form letter provided to copy and paste:

- http://www.easterncoyoteresearch.com/EasternNationalParks/
- *Critical*: Share this message with others to do likewise

Please remember that a couple of hours of your time will make a huge difference. Sharing this message with others and helping them submit their own comments will only amplify your effort. There is only so much one person can do but many people with a similar demand will definitely be heard. Be relentless, don't quit. Follow up with your contacts and make sure they act on your requests.

Thanks for your interest. Happy Howls!

Jon Way